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ABSTRACT

This compendium contains abstracts of approximately 700 papers which are classified under administration, curriculum and objectives, instruction and learning, measurement and research methodology, counseling and human development, history and historiography, social context of education, school evaluation and program development, or special interest groups. Related documents are ED 036 899, ED 036 900, ED 036 901, ED 036 902, and ED 052 152. (RA)

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paper and symposia abstracts

1972 annual meeting

Donald J. Cunningham
Editor

american educational
research association
Washington, D. C.

EA 004 147

FOREWORD

This volume contains all symposia and paper abstracts received from Division Chairmen prior to November 15, 1971. These abstracts were edited to meet formal requirements specified in the official "Call for Proposals" and, in some cases, to increase clarity of the abstract. Any violence to the substance of the abstracts was unintended, but the responsibility for such rests with me. I would like to urge members submitting papers to the Annual Meeting to invest a bit more time and effort in the preparation of paper and symposia abstracts. These abstracts will be perused by a rather large number of people, and it behooves authors to insure that the abstracts clearly convey the intent and results presented in the paper and that the abstracts are written in acceptable grammar. Attention to formal requirements for abstracts (word limits, legible copies, etc.) would also simplify the editor's task immeasurably.

I would like to thank Merlin C. Wittrock, Chairman of the 1972 Annual Meeting, for affording me the opportunity to participate in the convention, and the Division Chairmen for cooperating so graciously under tight time constraints. Special thanks go to Meredith Compton, Meeting Coordinator, for keeping me on schedule and tolerating my illegible handwriting. Donald Mizakowa and Jeanne Buchhofer assisted in numerous ways and devoted long hours to this rather arduous task. Their efforts are especially appreciated. Finally, I would like to apologize to my wife, Mary Lou, and to my children, Michael and Amy, for the absence of husband and playmate during the completion of this volume.

Donald J. Cunningham

Indiana University

December, 1971

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DIVISION A: ADMINISTRATION

PAPER SESSIONS

COMMUNITY DECISION-MAKING AND EDUCATIONAL POLICY

Community Status, Political Culture, and the Character of Suburban School Politics

WILLIAM L. BOYD, University of Rochester; DAVID O'SHEA, University of California, Los Angeles

Two comparative case studies conducted in the Chicago metropolitan area revealed marked and systematic differences in the character of school politics in blue collar and white collar suburban school districts. These differences appeared to flow from distinctly different political cultures in the two types of districts. Data in the two studies, which employed the deviant case analysis method and together included 23 districts, were collected by means of interviews and review of school board records. Some key variables affected by political culture were school board recruitment channels, conflict propensity in elections, and expectations held for and by citizens, board members, and superintendents.

Cassadaga Valley: The Community Setting for Educational Innovation

PAUL R. DOMMERMUTH, THOMAS A. PETRIE, RONALD E. HULL and DANIEL J. BAUMAN, State University of New York, Fredonia

This paper reports on the differential response of four rural hamlets to the introduction of a system of individualized instruction in their school system. Using a variety of data gathering methods it describes the communities and their variations in demographic characteristics, along social and political power dimensions, and in terms of the crucial institutional networks which bear on the acceptance or rejection of these educational innovations. Using a variety of sociological rubrics a model is developed for examining the community context of educational change. This model may be used to provide analytic depth to our understanding of social change.

Parent Participation in Educational Decision-Making

LOIS S. STEINBERG, City College, City University of New York

A four-year sociological field study of organized parent participation in educational decision making in suburbia is reported. Data was obtained through participant observation and interviews with elite and non-elite participants and include: precipitating events, administrative procedures, formal and informal channels of communication and participation, parental socialization and influence strategies. The analysis, comparing school-controlled and independent activities, will focus on factors inhibiting and fostering independent action, the ad hoc group formation process and action outcomes. Findings are compared with previous research and theory on participation and discussed in terms of their significance to decision-making, community control of schools and social change.

School Board Incumbent Defeat in Partisan Elections Related to Superintendent Involuntary Turnover

FRANK W. LUTZ and PATRICK D. LYNCH, Pennsylvania State University; ALLEN W. MOEN, Superintendent, Brewster, Minnesota

Objective of Study. School board incumbent defeat in non-partisan elections is related to involuntary superintendent turnover. (Walden, 1966). That work, based on previous field work (Lutz, 1962) was developed into a political framework. (Lutz and Iannaccone, 1969; Iannaccone and Lutz, 1970). This study investigated that framework in partisan school board elections.

Procedures. 181 Pennsylvania districts where board members are elected as Republicans or Democrats were studied. Data were subjected to chi-square analysis.

Hypotheses. Five hypotheses were tested to determine if partisan phenomenon changed this relationship.

Results. Based on these data partisanism did *not* change this important political process in the politics of local school districts.

CORRELATES OF TEACHER MILITANCY

Perceived Need-Deficiency and Militancy

LAWRENCE L. GIANDOMENICO and FRANK W. LUTZ, Pennsylvania State University

This study investigated the relationship between Maslow's need hierarchy and militancy among public school teachers. Two hypotheses concerning this relationship were tested using data from a sample of 247 teachers. The hypotheses were grounded upon the balance between that which the organization gives to the individual in the form of need-satisfaction and that which it demands from him in role performance. The results yielded a correlation between perceived need-deficiency and militancy of .3881. The use of multiple correlation indicated that higher order needs for self-actualization and autonomy were more highly related to militancy than needs from lower order categories.

Teachers' Militancy, the Potential for it, and Perceptions of School Organizational Structure

THOMAS G. GANS, Cleveland State University

The relationships that exist among the militancy of teachers, their professed potential for such militancy, and their perceptions of their school organizations were studied in twelve San Francisco area high schools. Findings of this study include evidence that size and/or bureaucratization of schools are not directly related to militancy and do not adversely affect teachers' perceptions of the school organization. The sex of teachers also seems unrelated to their likelihood of being militant. Both potential militancy and perceptions of school structural openness were found to be directly related to militancy.

Determinants of Attitudinal Militancy Among Professional Teachers and Nurses

JOSEPH A. ALUTTO and JAMES A. BELASCO, State University of New York, Buffalo

The basic concern of this paper is to identify those demographic, occupational and organizational variables which might differentiate between those professions that have higher levels of attitudinal militancy from those that exhibit less militancy. Semantic differential attitudinal data was collected from 414 teachers in two school districts and 482 nurses employed in three hospitals. Analysis indicated that attitudinal militancy is a generalized phenomenon across differing professions with organizationally based concerns, particularly frustrated career aspirations, as central differentiating factors.

The Local Grievance Process in Education: An Empirical Case Study

ALAN S. GLASSMAN, San Fernando Valley State College; JAMES A. BELASCO, State University of New York, Buffalo

The principal concern of this study was to identify those personal, institutional and organizational variables which differentiated between frequent and infrequent use of the local grievance process. Analysis of variance and stepwise multiple regression indicated the centrality of organizational climate variables, and participation deprivation in particular, as possible contributors toward a higher use of the grievance process. Also suggested was the differential utilization of the initial grievance filing and appeal processes, with initial grievance filing being a traditional upwardly mobile middle class strategy, while grievance appeals may be designed to exert pressure for fundamental change on the system.

Effects of Teacher Organizational Membership on School Expenditures and Policies in Illinois

REX D. GIUNTOLI, Illinois State University

This study measured the relationship between teacher organizations being represented at the bargaining table and monetary gains, internal budget ratios, and working condition policies. Three lists of districts were grouped as Illinois Federation of Teachers, Illinois Education Association, and Independent Districts. Information was obtained from both the school districts and the Office of the Superintendent of Public Instruction. The data was analyzed by using the chi square, the multiple linear regression and the analysis of variance. The Illinois Federation of Teachers made greater gains monetarily and in working condition policies than the other groups. The internal budgets were not affected.

DEVELOPMENT AND EVALUATION OF UCEA URBAN SIMULATION MATERIALS

Participant Evaluation of UCEA Urban Simulation Materials and Workshops.

JOHN BLOUGH, The University Council for Educational Administration

The paper will report the results of an evaluation by participants in ten summer workshops of UCEA Urban Simulation materials and methods. The results of a questionnaire will be summarized and issues derived from the data for future simulation work in educational administration.

Effects of Instructional Intervention on the Behavior of Participants in Coping with Information Overload in Simulated Decision Making Situations.

W. RAY CROSS and VERNON HENDRIX, University of Minnesota

The paper will report on a study testing the effects of an instructional intervention upon the subsequent behavior of subjects in dealing with information overload in a simulated administrative environment. Subjects will be observed playing the role of a junior high school principal in one of the UCEA Urban Simulations. Comparisons will be drawn between pre- and post-test behavior on ten plus ten in-basket items.

A Case Study of Simulation Use

LLOYD DUVALL and GLENN IMMEGART, University of Rochester

Simulation workshops have been conducted at The University of Rochester for a number of years. Over that period of time, different types of simulation materials have been used, a variety of workshop purposes have been pursued, and a number of instructional techniques have been employed. The experience thus gained has provided a background in simulation which may be of value to instructors, to researchers, and to developers of future simulations. The purposes of the paper, then, are threefold: (1) to describe one approach to simulation materials use, (2) to contrast the use of earlier simulation materials with the use of the URBSIM materials, and (3) to suggest future directions for research, instruction, and development of simulation materials.

A Factor Analytic Study of Administrator Values and Behaviors in Simulated Decision Making Situations.

ALAN K. GAYNOR, Boston University; L. JACKSON NEWELL, University Council for Educational Administration

The paper will report the results of investigative work done on several structured feedback instruments developed for use in workshops employing UCEA Urban Simulation materials. The purpose of the study is to identify common factors of administrative behaviors and underlying value assumptions. Instruments include the following: (1) Value Resolution Scale, (2) Action Analysis Profile, (3) Means of Communication Profile, (4) Value Assumptions Profile. Correlates include the Rokeach D-Scale and items on a Personal Information Questionnaire.

DIFFERING APPROACHES TO EVALUATING SCHOOLS

Comparing Block Scheduling and Traditional Scheduling on Student Achievement and Attitudes

ADRIAN P. VAN MONDFRANS, Brigham Young University; JAMES L. SCHOTT, Oakridge (Tennessee) Senior High School; DENNEY G. FRENCH, Richmond (Indiana) Senior High School

This study compares the effects of block versus traditional scheduling on student achievement and attitudes for high school freshmen through seniors. The block scheduling allowed greater flexibility in course administration on time and group size variables. In general, this added flexibility did not result in better achievement or attitudes. Significant gains in achievement due to block scheduling were noted for seniors only. Three possible explanations for this finding include: (1) teachers presently cannot use flexibility in time and group size effectively, (2) these two variables are relatively unimportant, or (3) these two variables are important for mature *Ss* only.

The Quality Assurance Model for Process Evaluation

MAX LUFT, JANICE LUJAN and KATHERINE BEMIS, Southwestern Cooperative Educational Laboratory

The Quality Assurance Model of Process Evaluation has been developed by the Southwestern Cooperative Educational Laboratory. It provides educational administrators several alternative techniques for maximizing desired terminal behaviors. By working with project directors, the evaluator helps to assist the program's implementation, providing prescriptive feedback in the program's weakest areas. Portions of the model have been used by over 50 educational administrators working with 500 teachers in a six state area in the Southwest. Several different programs have found it successful, and its adaptability makes it important to educational administrators and those preparing for roles that will require skill in project evaluation.

Evaluating the Performance of Total Instructional Systems

ERNEST A. VARGAS and LAWRENCE E. FRALEY, West Virginia University

The performance of complex instructional systems can be evaluated by an index of instructional accomplishment (I_A) which is a function of 1) change in learner behavior, 2) the consumption of learner time, and 3) the dollar cost of all system resources expended to provide the instruction. The three factors are expressed as consumed or attained percentages of the maximum attainable or allowable levels. ($I_A = \frac{\Delta S}{T+C} = \frac{90}{80+60} = .64$) reveals that on an interval of instruction costing 60% of allowable resources, a learner who spent 80% of the maximum allowable time learned 90% of what remained unlearned beyond his pretest level.

ECONOMICS AND EDUCATIONAL OUTPUT

Implementing Cost-Benefit Research in Education

RICHARD H. P. KRAFT, Florida State University

Investment in education is as important to economic development as investments in physical capital. A cost-benefit analysis indicated that the rate of return for the middle school education in Korea is noticeably higher (20.0%) than that for the high school level (11.2%) and for college and university graduates (9.5%). There are important implications of these and other economic and manpower considerations for governmental and educational decision-makers in Korea. Based on economic criteria it is concluded that the expansion of middle schools should be given high priority. Social and humane arguments support this contention.

The Concept of Equalization in School Finance: Three Normative Models and Their Measurement

G. ALAN HICKROD, TSE-HAO TCHENG and RAMESH CHAUDHARI, Illinois State University

Three normative models termed, "maximum-permissible-variance", "anti-determinism", and "inverse allocation" are outlined. The basic assumptions of the models are highlighted and methods of measurement commonly used with each model are criticized. Special attention is given to the use of the Pearson product moment correlation to measure equalization. Limitations of this procedure are stressed. Computational methods for the Gini Index of Inequality are given and a mathematical derivation is provided. Use of the Gini Index and the Lorenz Curve is illustrated with recent data from the state of Illinois.

Selected Economic Benefits from Illinois Junior College Programs

GEORGE W. FORGEY, Illinois State University

The primary objective of this study was to determine the benefits of Illinois junior college programs. Benefits were defined as: (1) earnings, (2) job satisfaction and (3) absence of unemployment. The secondary objective was to discover determinate earning variables. Data from 562 graduates of five Illinois junior colleges, analyzed by various bivariate and multivariate techniques, revealed that: (1) occupational program graduates had significantly greater earnings than transfer program graduates the first year of post-college employment, (2) job satisfaction was significantly related to the pursuit of an occupational program, and (3) the best earning prediction variables were "hours employed per week while attending college" and "sex".

Accountability and Teacher Satisfaction

ROBERT L. HORTON and CLIFFORD BRYAN, Western Michigan University

Teachers were tri-chotomized into high, medium, and low levels of accountability. While teacher satisfaction appeared constant, teachers felt greater accountability did create more work and pressures from administrators and parents. An examination of the patterns of dissatisfaction within the low accountability group suggested that in-service training and positive assistance of supervisors may be key variables in increasing teacher satisfaction with high accountability. A variable interaction analysis indicated that frequency of assistance by supervisors, low experience, and SES, contribute toward greater satisfaction. It was concluded that greater accountability (such as required in contract learning) can be attained without decreasing teacher satisfaction, perhaps actually increasing it.

EDUCATIONAL ADMINISTRATION: DIFFERING PERSPECTIVES

The Values and Value Systems of Educational Administrators

JOHN P. SIKULA, University of Toledo; ANDREW F. SIKULA, University of Illinois, Chicago Circle

This study of 62 educational administrators supplies empirical evidence that supports the contention that there are significantly different profiles associated with different occupational-career groups. Utilizing the Rokeach Value Survey—Form D, the authors surveyed and compared the value configurations of twelve distinct groups and found, that the profile of educational administrators differed significantly from other occupational-career and managerial groups. Educational administrators revealed that their goals or end-states of existence (terminal values) were relatively very idealistic and abstract in nature while their methodology or means of achieving (instrumental values) the end-states were of much less relative concern.

The Administration of Teaching Personnel: Implications for a Theory of Role Conflict Resolution

FRANK A. STANCATO, Central Michigan University

The objectives of this inquiry are: 1) to present an overview of the concept of role conflict, 2) to examine areas of role conflict between administrative and teaching personnel, and 3) to discuss a number of strategies to resolve these conflicts. The areas of conflict consist of: 1) the degree of expertness for educating students, 2) the authority structure and the teacher's professional status, and 3) the ambivalence toward the concept of leadership. Suggested means for conflict resolution are: 1) defining the role of the curriculum supervisor as a service function, 2) the concept of empathy in role taking, and 3) the adoption of norm leveling conferences.

Need Satisfaction of Educational Administrators

FRANK BROWN, City College, City University of New York

Five types of psychological need classes, ordered from the most basic to the most least basic, were studied—security, social, esteem, autonomy, and self actualization. A questionnaire on need satisfaction was applied to a sample of public school administrators. Analysis revealed that there is no relation between administrators' need satisfaction and community type, line or staff type positions, type of principalship, age, sex, ethnic identification, or organizational size. However, it did reveal the existence of a statistically significant relationship between administrators' need satisfaction and their job level, minority student composition of a school, and their level of education.

The Poverty of Educational Administration

DANIEL J. BROWN, State University of New York, Buffalo

An important reason why educational administrators appear ill-equipped to meet contemporary challenges is the poverty of present-day administrative knowledge. Two general modes of generating such a knowledge base are outlined and contrasted: the humanist (involving verbal theory and "soft" data) and the scientific (involving formalized theory and "hard" data). A categorization of articles in *Educational Administration Quarterly* and the *Administrator's Notebook* is carried out and reveals an imbalance toward the humanist tradition. Implications of this imbalance for the advancement of knowledge and for the resultant service of university departments to the field are discussed.

EDUCATION RESOURCE ALLOCATION: LOCAL AND STATE

An Investigation in Educational Resource Allocations in School Districts

THOMAS L. HARROW and CHARLES D. DZIUBAN, Florida Technological University

Information was collected from sixty-seven school districts concerning twenty-seven variables which constituted the optimum size school district. The variables were analyzed using the principal component procedure to identify factors for consideration when allocating educational resources to school districts. The results showed that teacher commitment, transportation of students, financing of school districts and pupil population in educational programs were the four main areas for school district allocations of resources.

A Study of the Relationships Among District Size, Expenditure Level, and Composite Achievement

STANLEY A. RUMBAUGH, DAVID L. DONOVAN, ROBERT J. HUYSER, and DANIEL E. SCHOOLEY, Michigan Department of Education

Simple linear correlations, partial correlations, and moderator variable techniques were utilized to investigate the effects of school district size on school district level expenditure and composite achievement. Expenditure data were assembled on more than 500 Michigan districts and the achievement data were collected on over 300,000 pupils at the fourth and seventh grade levels. Overall correlations accounted for only two percent of the variance. Partial correlations yielded a slight increase in the coefficients. Using size as a moderator variable scale seems to be promising. The results will be discussed in terms of their impact for educational decision makers.

The Estimation of a Long Run Cost Function for West Virginia Public High Schools

GARY P. JOHNSON, Pennsylvania State University

Public schools today face increasing financial pressure. The present paper sets out a model which generates new, relevant information about the relationship between educational output, scale and per-pupil costs: information which, if used, would result in more efficient educational spending. Specifically, a long run average cost function is estimated. Minimum per-pupil operating costs are achieved when average daily attendance is 1,426 students and the total square feet of facility is 124,062. It is the first time such a model has been used in public education and has particular relevance for decisions pertaining to investment in new facilities and/or consolidation.

ORGANIZATIONAL RESPONSE TO MINORITY GROUP CLIENTS

Academic Performance and Prediction of Performance of Specially Admitted Economically Disadvantaged Students and Other Students in an Urban Restricted-Admissions High School

MAUREEN C. MARAZZI, Brooklyn College, City University of New York

Comparison over four years of academic performance (Reading, Algebra, and Weighted Grade Point Average) of two groups of students regularly admitted, via an Admissions Test, and one group specially admitted, via a Summer Program, to a Specialized High School in New York City, showed significant differences. Mean scores in Reading were significantly lower in the specially admitted group but mean scores in Algebra and Weighted Grade Point Averages were as high or higher in this group than in the regularly admitted group scorings in the lower quartile on the Admissions Test. Proportions of dropouts did not differ significantly.

The Participation of Minority-Group Parents in School Activities: A Study and a Case Study with Guidelines

JOE L. REMPSON, Bronx Community College, City University of New York

The study identified factors that help to explain the participation and nonparticipation of minority-group parents in school activities. A parent education program conducted by a parent organization in 27 public elementary schools in New York City was evaluated and a study made of school-parent activities in these schools. Data were secured from parents, PTA presidents, teachers, principals, and records. Questionnaires, interviews, informal contacts, and observations were used. Seven main hypotheses and nine "popular" hypotheses were tested, and a case study was made of the experimental program. The findings enabled the formulation of 24 guidelines for reaching minority-group parents.

Exceptional Graduate Admissions at The Pennsylvania State University

MANUEL G. GUNNE and LARRY L. LESLIE, Pennsylvania State University

Although exceptional admissions critics assert that the quality of graduate programs will decrease as admissions criteria are changed, data to substantiate this claim have not been justifiably presented. Through the use of survey methodology, this study attempted to ascertain the possible difference between exceptionally admitted graduate students and traditionally admitted graduate students at The Pennsylvania State University. Findings indicated that exceptionally admitted students were perceived by knowledgeable faculty to be approximately equal in ability and achievement to traditionally admitted students. This was true for the university as a whole and for colleges and departments considered separately. The implications are clear.

PERCEPTIONS OF SCHOOL LEADERSHIP AND CLIMATE

A Study of Principal Leader Behavior and Contrasting Organizational Environments

FRED C. FEITLER, Southern Tier Regional Education Center

This study examined relationships between leader behaviors of elementary school principals and organizational processes of their schools. *T*-tests were used to determine significant relationships between leader behaviors, measured by the Leader Behavior Description Questionnaire—Form XII, and contrasting school typologies, described by the Profile of a School instrument. Twenty-three schools and four hundred twelve teachers comprised the sample. Four leader behaviors, tolerance of freedom, consideration, integration, and tolerance of uncertainty, were found to be significantly higher for schools having participative group organizational processes than for schools described as having more authoritative processes. Implications for organization development and research are discussed.

The OCDQ Revisited

ANDREW E. HAYES, University of Georgia

The purposes of this study were (1) to determine the factor structure of the Organizational Climate Description Questionnaire when the original data were subjected to statistical procedures that have become available since the original Halpin and Croft climate study was conducted and (2) to identify "climate types" that are based upon the factor structure which was identified through these new analyses. Maximum likelihood factor analytic methods with subsequent oblique rotations of the factor matrices and taxonometric clustering procedures followed by multiple discriminant analyses yielded factor solutions and "climate types" that differ from those which Halpin and Croft identified in their original climate study.

Principal Leadership Styles and Effectiveness as Perceived by Teachers

ROBERT T. UTZ, University of Toledo

Urban teachers were asked to evaluate their Principals by: (1) ranking his overall effectiveness; (2) rating his consideration for teachers, development of learning programs, and plant management skills; (3) responding to a scale operationalizing the concepts of concern for "Production" and "People," adapted from Blake and Mouton's *Managerial Grid.* Results indicated a positive linear relationship between the Principal's perceived effectiveness and his scores on both "Production" and "People" dimensions. Parallel relationships were found between his perceived effectiveness and his ratings on consideration, learning programs, and plant management. Principals perceived below "Average" ranked lower on "People" skills than on "Production" skills.

The Relationship of Students' Personality Structure, Socioeconomic Background, and Program Placement to Their Perception of the Organizational Characteristics of Select Public High Schools

GEORGIANNA A. LYNN, Newark State College; LLOYD K. BISHOP, New York University

Four hundred sixty-two students from thirteen public high schools in the New York City metropolitan area responded to the *Stern Activities* and *High School Characteristics Indexes.* Variables such as school setting, student SES and program placement were controlled. Factor analysis yielded a profile of youth and school divergent from earlier major adolescence studies. Significant differences among schools and students for both the *AI* and the *HSCI* are reported. Factor reliability is adequate. A joint factor analysis indicates clear instrument independence. Employing the *AI* and *HSCI* in concert, important information concerning student needs-patterns and organizational presses as perceived by students is presented.

RESPONSES OF ORGANIZATIONAL PARTICIPATIONS TO INNOVATION

Interpersonal Compatibilities of Innovative and Non-Innovative School Principals and Curriculum Coordinators

WILLIAM K. WIENER, Lenoir-Rhyne College

Is the relationship between the principal and the curriculum coordinator a variable that is related to the successful adoption of innovations in schools? A procedure for selection of innovative and non-innovative schools is making use of Miles' (1964) typology of innovation in education was tested. Principal-curriculum coordinator interpersonal compatibilities were ascertained from FIRO-B scores (Schutz, 1958) and comparisons on innovative/non-innovative principal-curriculum coordinator compatibility were made on sixteen compatibility dimensions. Findings indicated significantly greater innovative principal-curriculum coordinator compatibility in areas where control and power were issues. This suggests some implications for the selection and subsequent prerogatives of innovative principals.

A Conflict Model of Change: The Advocate

ERNEST R. HOUSE, JOE M. STEELE and THOMAS KERINS, University of Illinois, Urbana-Champaign

A study was conducted to investigate empirically the nature of program development, testing Roger's model of collective adoption of an innovation against the data, and distinguishing between the developmental patterns of high and low quality programs. The development of a new quality program was found to be dependent upon the interaction of a small number of powerful variables, best described by an "advocate" model of program development. These findings suggest a "conflict" model of educational change may be more accurate than the consensus models now employed.

The Effect of Educational Consultant Teams on the Acceptance of Innovations

JACK SANDERS, Ohio State University; GARY D. BORICH, University of Texas

This study reports the development and assessment of a model for engendering the acceptance of innovations with the use of educational consultant teams. A questionnaire was constructed and empirically validated to test (a) the number of innovations adopted, (b) the correspondence of innovations with an individualized learning model, and (c) the adoption of individualized instruction. Twelve schools were assessed, six with consulting teams and six without consulting teams. Results indicate the number of innovations adopted was greater for schools with educational consultant teams. Implications for the diffusion and adoption of innovations within the context of the elementary and secondary school are discussed.

SCHOOL AS A BUREAUCRACY

The Relationship Between the Formal and Informal Organizations of Three Kansas Secondary Schools

EDWARD H. STEHNO, Fort Hays Kansas State College; MILO STUCKY and CECIL G. MISKEL, University of Kansas

Purpose: The relationship between formal and informal secondary school organizations is described. Conceptual developments in organizational theory by Weber and informal organizational theory by Iannaccone provided catalyst for the study. *Sociometric Questionnaires* and *School Organizational Inventories* were administered to 204 staff members in three secondary schools. Informal groups were determined by factor analysis. Multiple stepwise discriminant analysis was used to determine the discriminant functions of formal organizations and other demographic variables. The perceived formal organization had little effect upon informal interpersonal school relationships. Sex and curriculum area affiliation of staff members were the predominant factors for determining informal groups.

School System Bureaucratization and Teachers' Sense of Power

RUSSELL W. MEYERS, University of Colorado

This study investigates the relationship of school system bureaucratization and teachers' sense of power. Bureaucracy is considered a multidimensional concept. Data were gathered from thirty Illinois school systems. The system is the unit of analysis. Positive relationships were hypothesized between bureaucracy and sense of power. None of the seven specific hypotheses was supported in the data analysis. Two primary conclusions are suggested. (1) Bureaucracy may not be a useful concept in explaining sense of power. (2) Labor-management conflict in schools may be a more powerful explanatory concept in explaining the level of teachers' sense of power.

Staff Conflict, Organizational Bureaucracy, and Individual Satisfaction in Selected Kansas School Districts

EDWARD H. GERHARDT and CECIL G. MISKEL, University of Kansas

Using conflict, organizational, and incentive theory as a basis, the study isolated specific factors in teacher conflict and related them to school bureaucracy, individual satisfaction, and central life interest. A stratified random sample of 642 public school teachers responded to a Likert-type questionnaire containing items measuring each of the variables. Correlational analysis revealed positive relationships between conflicts and bureaucracy. Stepwise regression indicated that individual satisfaction is the best predictor of conflict, followed by the hierarchal authority dimension of bureaucracy. Central life interest was a significant factor in individual satisfaction. Implications were used to support and modify conflict and incentive theory.

TEACHERS, PUPILS AND PERCEPTIONS OF CONTROL

Job Satisfaction of the Public School Teacher, a Function of Subculture Consensus with Respect to Pupil Control Ideology

VINCENT D. YUSKIEWICZ, Northeastern Educational Intermediate Unit #19; WILLIAM S. DONALDSON, Pennsylvania State University

Teachers' own attitudes to pupil control, teacher perceptions of their colleagues and/or principals' attitudes toward pupil control were investigated using coefficients of correlation, *t*-tests of selected variables, and multivariate regression correlations to test hypothesized relationships. A total of 910 teachers—473 elementary and 437 secondary—were assessed. Teacher job satisfaction was found to be a function of subculture consensus with respect to pupil control ideology, accentuated in terms of teaching level and experience. Forty percent of the variability in job satisfaction was accounted for by using internal-reward-type independent variables, an R^2 of 0.40 was generated in the prediction of job satisfaction.

Schools as Seen by Children: A Factor Analytic Study of the Perception of Fifth and Sixth Grade Children Toward Elementary School Environments

DAVID G. SADKER and ROBERT SINCLAIR, University of Massachusetts

This was a study to determine the nature of elementary schools by identifying the dimensions of the elementary school environment. In addition, the study determined similarities and differences in the various practices of elementary schools. A factor analysis of the perceptions of over 5,000 students in 54 elementary schools identified six dimensions of the elementary school environment: Alienation, Humanism, Resources, Autonomy, Morale and Opportunism. An instrument, the revised Elementary School Environment Survey, was created to provide educators with a tool to measure elementary schools along these six dimensions.

Pluralistic Ignorance and Pupil Control Ideology

JOHN S. PACKARD, University of Oregon; DONALD J. WILLOWER, Pennsylvania State University

This research predicted and found inaccurate perceptions in a custodial direction of the pupil control ideology associated with various school roles; a relationship called pluralistic ignorance. Pupil control ideology (PCI) is delineated on a custodial-humanistic continuum operationalized by form PCI. Self PCI scores of a random sample of Pennsylvania teachers, principals and counselors were contrasted via *t*-tests with PCI attributions for typical role occupants. Custodial pluralistic ignorance was observed in attributions of each group for the typical teacher and in teacher and counselor perceptions of principal ideology. Teachers were not inaccurate concerning counselor ideology; principals overattributed humanism to counselors.

WORK VALUES AND TEACHER ATTACHMENT TO THE ORGANIZATION

The Stability of a Modified *Work Components Study* Questionnaire in the Educational Organization

CECIL G. MISKEL and LEONARD HELLER, University of Kansas

The investigation's objective was to establish factorial validity and reliability of an industrial selection device based on Herzberg's theory of work motivation to the school organization. The questionnaire was reworded to reflect an educational work situation. A random sample of 197 students, 118 administrators, and 432 teachers was made. Statistical procedures included varimax and maxplane factor analysis and Cronbach's item analysis. Six stable factors composed of 56 items with reliabilities ranging from .73-.83 were isolated. Finally, the theoretical basis and similar psychometric properties in different organizational types are indicative of versatility for probing many provocative relationships related to work motivation.

Sources of Work Attachment Among Public School Teachers

M. REX FULLER and CECIL G. MISKEL, University of Kansas

The investigation examined sources of attachment to work as related to satisfaction, indifference, and dissatisfaction among public school teachers. The theoretical rationale for the study was constructed from the findings and conceptual assertions of Dubin's study of industrial workers. Furthermore, the questionnaire also paralleled the questionnaire for industrial workers developed by Dubin. When work features valued by a sample of 508 satisfied, indifferent, and dissatisfied educators were submitted to the chi square test, significant differences comparable to those reported by Dubin were found. In addition, the findings formed the basis for building a two tier incentive system for educators.

The Effects of Various Attitude Congruence Conditions on Teacher Selection Decisions

DANIEL L. MERRITT, Indiana State University; HARRY E. RANDLES and ROBERT CLEVELAND, Syracuse University

The focus of this study was on the relationships between attitude congruence and selector's decisions about teacher candidates. Selectors rated a teacher applicant as part of a simulated teacher selection situation. The applicants were represented by written information in which the proportion of attitude congruence with the selector and relevance of the attitudes to the vacancy were varied. The data indicated that the selectors' decisions about teacher candidates are influenced by the proportion of congruent attitudes and are not influenced by the relevance of the attitudes to the position vacancy. The implications of the findings for teacher preparation programs and teacher recruitment are discussed.

Collective Legitimacy and Organizational Attachment: A Longitudinal Case Study of School Personnel Absences

R. OLIVER GIBSON, State University of New York, Buffalo

Absence is an important aspect of productivity. Hence it is important to understand better the dynamics of absence. It seems useful to conceptualize absence as contractual relationships within a social exchange framework. Within that framework collective legitimacy and organizational attachment appear as promising explanatory concepts. The study is a longitudinal case investigation of patterns of absence behavior. Type and length of absence are seen as indicators of legitimacy and frequency of absence an indicator of attachment. The findings are consistent with the proposed sociological formulation and suggest that rules and regulations may confirm rather than initiate patterns of absence behavior.

SYMPOSIA

THE ADMINISTRATIVE BEHAVIOR OF COLLEGE DEANS

FREDERICK R. CYPHERT, University of Virginia, ORGANIZER

The objectives of the Symposium are: 1) To bring together the major studies which give insight into the workings of the deanship; 2) To focus attention upon the need for additional research relative to this position of leadership; 3) To clarify the questions which give promise of greatest potential for future research and explication; and 4) To demonstrate the generic behavior of deans both across and within academic fields.

The first presentation will be made by: Frederick R. Cyphert, Dean, School of Education, University of Virginia. His topic is "An Overview of the Research Literature Directly Relating to the Deanship". The scarcity of direct studies, the potential of related studies, and a strategy for promoting investigation and data-based performance will be discussed.

Luvern Cunningham, Dean, College of Education, The Ohio State University will then discuss: "Preparing Administrators for Making Decisions". The deanship has been neglected as a field of training. The absence of tradition and the susceptability of the role to study make the possibility of research and research based preparation programs most exciting.

Ralph W. Ingersoll, Assistant Dean, School of Medicine, University of Virginia will read his paper, "A Comparison of the Decision Strategies of Successful and Unsuccessful Deans". The similarities and differences of the major questions dean's feel are crucial are similar across academic areas and differ sharply between successful and unsuccessful deans.

Arliss Roaden, Dean, Graduate School, The Ohio State University will discuss: "Dean's Decisions Related to Academic Governance". There is a general trend toward multirepresentational governance coalitions and the development of special interest unionization with conflict resolution taking place at the bargaining table. Much more of the dean's efforts will be devoted to this arena.

Finally, Jay L. Chronister, Director, Center for Higher Education, University of Virginia will discuss the topic: "The Application of Research in Decision Making to the Role of the Dean". The literature of the field could be strengthened considerably if decision theory and decision research were systematically related to major facets of the dean's role.

David L. Clark, Dean, School of Education, Indiana University, and Charles Donner, Assistant Dean, College of Medicine, University of Washington, will discuss these papers.

The educational importance of this symposium may be summarized thusly: the deanship is a significant leadership position in universities. Unfortunately, there is relatively little research based information relative to the effect of this role, and that which exists is not readily available. This symposium will pull together the major extant studies of the deanship, examine them critically, identify information of value to those persons who occupy the deanship, and delineate the nature and focus of needed research on the deanship.

ANTHROPOLOGICAL STUDIES IN EDUCATIONAL ADMINISTRATION

PAUL A. POHLAND, The University of New Mexico, ORGANIZER

The purpose of the proposed symposium is threefold: (1) to illustrate the viability and vitality of anthropologically oriented methodologies to significant issues in educational research; (2) to further elucidate organizational decision-making processes; and (3) to shed further light on the dynamics of change within educational organizations.

The research papers to be presented have as one common thread the issue of organizational decision-making as it is related to the change processes. A second commonality is methodological: all studies were conducted via variants on social anthropology.

The first four papers move from a micro to a macroscopic consideration of the decision and change processes. Erickson's paper deals with organizational decision-making on the one-to-one level of student/counselor interaction. Reynolds considers organizational decision-making and the process of change using a particular school as the unit of analysis. Wheeland expands that unit to school district proportions, and Benenati makes the logical extension to the state politics of educational change. The final paper, Olson's, examines environmental and demographic considerations which may well influence the decision and change processes whatever the analytic unit.

Fredrick Erickson of Harvard University reports on the use of "cognitive anthropology" to delineate perceptions of organizational structure revealed in transcripts of school counseling sessions and transcripts of subsequent interviews with the participants in his paper "Scouting Organizational Mazeways: Decision Processes in the School Counseling Interview."

Counselor and student bring to the interview differential perceptions of the organizational structure of the school. These ideas are more or less tightly organized as "cognitive maps" which may or may not faithfully represent the organization as it actually exists. For the student "maximum utility" in the interview consists of learning about the organization and how to "deal" in it. He scouts the institutional territory under the tutelage of the counselor.

Thus decision alternatives during the interview are closely related to:

1. The actual organizational structure of the school,
2. Structure as perceived by counselor and student, and
3. Structure as symbolized in "catalogue" or list of courses.

Larry Reynolds of the St. Louis Public Schools, in his paper "Problems of Implementing Organizational Change in the Elementary School: A Case Study" reports on the attempts by one school to implement innovative staffing and curricular changes. Staff reorganization included a movement away from the self-contained classroom concept, re-structuring of the hierarchy of roles, increase in staff, changes in role (differentiation), and re-allocation of major decision-making responsibilities. Curricular changes centered on the institution of a program designed to improve the quality and quantity of arts instruction.

The proposed changes were only partially implemented. Many of the characteristics of the previous instructional organization and curriculum were retained. Major impediments to the implementation of the proposed changes included the norm of teacher autonomy, the inability of the staff to reach consensus relative to the group decision-making process, and a lack of clarity with regard to instructional change.

A case study approach was employed utilizing participant observation as the data collection medium.

Jack Wheeland of Syracuse University will present the paper "Organizational Behavior in School District Consolidation". This paper describes via an anthropological approach how decisions were made relative to the reorganization of a parish-based parochial school system (Roman Catholic) to a county system having more centralized direction, coordination, and financing. The roles of the diocesan hierarchy, other clergy, religious, and lay people in the consolidation process are explored. Political, social, economic, religious, ethnic and educational variables are taken into account. The units involved include elementary, Junior High and High Schools.

The study has national implications for parochial school systems. All face dwindling financial, staff, and student resources. With or without state and federal aid, most will have to change their organizational and financial structures as a prerequisite to survival.

Carl G. Benenati, New York State Education Department will discuss "State Politics in Educational Decision Making in New York State, K-12." This paper applies a two-stage "mandate model" (popular and policy) in analyzing the politics of educational decision-making in New York State. Both popular and policy mandates are conceived as functioning in an evolutionary and cycular manner.

The popular mandate is conceptualized as the development of demands by individuals or groups upon the extant influence structure.

As such demands accelerate over time they reach "critical issue" proportions, thus setting the stage for the transformation of popular mandates into policy mandates.

Policy mandates are conceptualized as significant changes in the preference, structural relationship, or processes which produce new policy directions within a political system and which have the force of law.

Finally, John Olson, University of South Florida, will present "Human Ecology: A Means of Environmental and Demographic Analysis in Educational Research." This paper provides an ecological-demographic means of analysis for an elementary school attendance area by systematically organizing socio-cultural elements within the spatially delimited context of that area. Four fundamental concepts of human ecology—environment, population, technology and organization—are employed.

Data was gathered from both the private and public sectors of the community during the extended field study. Mapping the area to determine land use patterns, interviewing, and examination of records from school district and county planning offices were a few of the data collection procedures utilized.

It is contended that this form of analysis (human ecology) provides a systematic means of analyzing current conditions and predicting future changes within a given educational environment. As such, it may be viewed as a possible and useful input into short and long range decision-making whatever the unit of analysis.

Joseph McGivney, Syracuse University, will discuss the presentations.

The studies reported should contribute to the understanding of decision processes relative to change within educational organizations. The wide range of variables considered and the various anthropological approaches utilized should suggest directions for further research.

CHANGE PROCESSES IN EDUCATION: SOME FUNCTIONAL AND STRUCTURAL IMPLICATIONS

ROBERT J. COUGHLAN, Northwestern University, ORGANIZER

We are in an era of headlong change, one in which the key institutions in our society are confronted with change and are themselves contributing to it. We at Northwestern University have found that many of the problems of change cut across institutional lines. The language may differ, the specific settings may vary, but there is an identifiable range of generic problems confronting all those who are managing organizations in times of great change. We believe that solutions found effective in managing change in one institution may offer guidance to the administrator in another. Further, those solutions implemented in one organization of society have consequences far beyond that segment. It is incumbent upon us then to maximize our findings by applying them across institutional lines where appropriate and where possible.

The participants in the proposed symposium have been studying the change process in business, schools, government, and community organizations for several years. Using the concepts and techniques of the behavioral and social sciences, we have sought to identify those core structures and functions that are fundamental to the processes of change. From our studies and the findings of others in the field, we are also developing a joint Management-Education Program designed to train change agent teams for service in school systems.

The purpose of the proposed symposium is to focus in on some of the functional and structural implications of change processes with special reference to education. Four specific objectives for the symposium have been developed: 1) to provide a summary and overview of the most recent and relevant research on change. Special emphasis will be placed on the role and functions of change agents in relation to large scale social system change; 2) to suggest an inter-disciplinary framework which provides linkages between theory and practice in effecting durable change in ongoing educational systems; 3) to pinpoint the specific problems and needs of educational organizations in adapting to their complex and dynamic environments; and 4) to provide the rationale and support for a particular approach to social systems change which employs the change agent team concept.

The five papers to be presented as part of this symposium are a product of collaboration among members of Northwestern University's School of Education and Graduate School of Management. The symposium participants, who are associated with the disciplines of educational administration, marketing, and organization behavior, examine the topic of educational change from a variety of perspectives.

The first paper, "Change Agents and Social Systems Change," will be a critical review and synopsis of the major research and writings on the process of innovation in educational social systems. The paper, presented by Gerald Zaltman and Robert A. Cooke of Northwestern University, will place emphasis on the literature pertaining to the role of the change agent in the change process. Previous work will be cited concerning both micro-factors, such as the psycho-social attributes of change agents, and macro-factors relating to educational institutions as social systems and their conditions of successful or unsuccessful innovation.

An initial consideration in designing a program for educational change is the specification of the type of change agent to be utilized. This is the topic of the second paper, "Criteria for Type of Change Agent in Changing Educational Organization," by Robert B. Duncan and Robert A. Cooke, Northwestern University. This paper will focus on the kinds of choices and the trade-offs among the choices that the educational administrator will be faced with in specifying the change agent's role. A model will be outlined to guide the administrator in selecting the type of change agent to implement for effective change agent programs.

The third paper deals with "Evaluative Research as a Component in Organizational Change Strategies." A great amount of human and financial resources are being committed to creating basic institutional change in educational systems. However, there is rarely a systematic evaluation component built into the program to assess the effectiveness of the change. In this paper, a basic overview of evaluation research will be presented in developing a change strategy that utilizes an evaluation component. This paper will be presented by Robert B. Duncan of Northwestern University.

The fourth paper focuses on variables to be considered in implementing the change agent team approach to planned change. The presentation is titled "Implementing the Change Team Concept," and will be given by Robert J. Coughlan and Gerald Zaltman of Northwestern University. The first section of the paper deals with team considerations: Composition and size, recruitment and selection, etc. The next section outlines plans for developing the necessary understanding, acceptance, and support of the approach by key decision makers within the system. The third section discusses structural, technological, individual and group barriers to and facilitators of the approach in schools. The final section presents various strategies and tactics for institutionalizing the approach in a school system.

The final paper, prepared by Michael Radnor and Robert J. Coughlan of Northwestern University, provides "A Training and Development Program for Administrative Change in School Systems." The basic objective of the program is to develop, operate, and test a model designed to prepare teams of administrative change agents for service in selected school systems. Team members will receive training in both the technologies of administration and in the methodologies and skills of organizational change. Concurrently, the participating school system will be the subject of change preparation programs. Change agent teams and the target school systems will remain in close contact with the university, allowing for reinforcement of change efforts and program evaluation.

The Chairman of the symposium, B. J. Chandler, Dean of Northwestern's School of Education, will initiate an open discussion of the papers in an effort to uncover additional interpretations of the problem. Professor Everett M. Rogers of Michigan State University will be the principal discussant for this symposium.

THE CHANGING EQUITY PRINCIPLE AND STATE EDUCATION FINANCE SYSTEMS: LEGAL, FISCAL AND POLITICAL DIMENSIONS

JOEL S. BERKE and ROBERT J. GOETTEL, Syracuse University, ORGANIZERS

Attainment of equality of educational opportunity has long been one of the guiding tenets central to state systems of education finance. In 1905, Cubberly proposed that state aid schemes provide a minimum educational program through incentive grants citing the need to equalize the uneven burdens in school taxes. In 1923 Strayer and Haig noted that the need for "equalization of educational opportunity" continued to exist in proposing that state aid be allocated in inverse proportion to the wealth of local school districts. And in the 1930's Morrison argued that true equity in financing of education could not be achieved without shifting the responsibility for raising revenues and allocating resources completely to state governments.

The last three to four years and particularly the latter half of 1970 have witnessed perhaps a more intense focus on the equity principle in financing education than at any other time in the previous three quarters of a century. This newly aroused concern with equity results from our current crisis in school finance. Given the serious problems created by a lack of adequate funds for needed educational services, state finance systems are seen as contributing to a condition in which poorer school districts typically make greater efforts, but often produce only half the per pupil expenditures of more wealthy districts. Some of those districts which are less able fiscally have taken their case to the courts contending that state systems of educational finance have denied them the "equal protection" guaranteed by the 14th amendment to the federal constitution. The decision of the California Supreme Court in September, 1971, in Serrano *vs.* Priest may well serve as the most significant catalyst for generating fundamental revisions in state education finance systems throughout the nation.

The purpose of this symposium is to examine three closely related dimensions to the current thrust for revising state systems of school finance: the legal, fiscal and political. What do the behaviors observed within each dimension portend for the restatement of the equity principle? How does each dimension relate to the other two? What do the fiscal and political realities suggest about the ability of reformers to achieve "equal protection" under the law?

The participants in this symposium are consultants to, or staff of, the Policy Institute, Syracuse University Research Corporation. Their individual papers are products of recent research conducted for the New York State Commission on the Quality, Cost and Financing of Elementary and Secondary Education, the Senate Select Committee on Equal Educational Opportunity and the Lawyers Committee for Civil Rights.

The first paper will be "The Implications and Applications of Recent 14th Amendment Challenges to School Finance Systems" by Joel S. Berke, of Syracuse University and Barrie L. Goldstein of George Washington University. On August 30, 1971, the Supreme Court of California struck down that State's system of educational finance as a violation of the 14th Amendment Equal Protection Clause. The infirmity, they held, was that California's pattern of shared State and local fiscal responsibility "invidiously discriminated against the poor (by making) the "quality of a child's education a function of the wealth of his parents and neighbors."

In the wake of that decision, state educational finance systems across the nation have been subjected to challenge. This paper will (1) examine and evaluate the newly emerging legal doctrine, (2) assess the prevalence of potentially unconstitutional inequities in educational opportunity, and (3) sketch, in broad outline, the range of legally permissible alternative finance systems.

The second paper will be "Revising State Education Finance Systems: Simulating and Testing Policy Alternatives" by John Callahan of the University of Virginia and Robert J. Goettel of Syracuse University.

When modifications in a state education aid formula are under consideration, the typical State Education Agency can computer simulate the potential impact of such modifications so that legislators can know (1) how much additional state aid will be required, and (2) the extent to which individual school districts will gain or lose. Until recently, the simulation techniques employed were usually capable of answering these questions due to the marginal character of proposed changes. But, the more sweeping revisions in school finance currently being suggested require more dynamic simulation and testing models if legislators are to fully understand policy alternatives.

This paper examines several major state finance revisions and the procedures used to analyze their impact on school district per pupil expenditures, state aid and local tax rates in New York, Massachusetts and California. Policy alternatives include utilization of measures of educational need, municipal overburden factors in the general formula and regional and full state financing schemes. Attention is given to problems of data availability as well as analysis of options.

Donna Shalala of Baruch College will read the paper "Revising State Education Finance Systems: A Case Study of Political Realities". Efforts to reform state systems of education finance have a long and vigorous history in the United States and have stimulated considerable scholarly interest. Most of this research has centered on curriculum reform and the structures of the governance of education. More recently political scientists and economists have concerned themselves with problems of education finance. However, little of this new analysis has focused on the political realities associated with revising state school finance systems. These political considerations include: (1) the changing characteristics of state legislatures resulting from the redistribution of population between city and suburb and the 1962 reapportionment decisions, (2) the inherent "no politics" ideology of education, (3) the special interests represented by state education departments, (4) the growing influence of teacher organizations and (5) the concerns of real estate interests as well as business and commercial pressure groups. The proposals of the New York State Education Commission being considered by the 1972 Legislature represent comprehensive sweeping change in that State's existing education finance system. How traditional and emerging political forces affect the success and/or failure of those recommendations and the implications for revising state systems of school finance generally are the subjects of this analysis.

Stephen Browning of the Lawyers Committee for Civil Rights and David Stern of Brookings Institute will discuss these papers.

COMPONENT SKILLS OF INSTRUCTIONAL SUPERVISION: TRAINING AND EVALUATION SYSTEMS

DELBERT K. CLEAR, University of Wisconsin, Milwaukee, ORGANIZER

The objectives of the symposium are as follows: 1) to present and contrast two systems models of teacher supervision; 2) to compare existing instruments for the analysis of classroom instruction; 3) to present a model for the analysis of supervisory conferences; 4) to present and contrast two programs for the training of supervisors; 5) to present an initial evaluation of one program of instructional supervision; and 6) to provide a forum for discussion of models, tools, training, and procedures for evaluation of instructional supervision programs.

Instructional supervision is conceived as a continuous program of evaluation and training activities aimed at improving teachers' instructional behavior in order to increase pupil learning. School administrators, particularly at the building level, and subject matter or grade level specialists, have usually been most responsible for supervision, though recently teachers themselves have begun to supervise other teachers, particularly in teaching teams.

The participants in this symposium have been studying, analyzing, and practicing supervision in a systems framework. They have described several functions of effective supervision of in-service teachers and have explicated activities, skills, and instruments necessary to accomplish each. They also have developed training programs for preparation of instructional supervisors.

The technical skills of teaching defined in micro-teaching research at Stanford University in the 1960's provide the basic foundation for the approaches to supervision that will be reported. Not only do the participants maintain, as did the Stanford researchers, that complex human tasks (i.e., teaching and supervision) can be parsed, but also they maintain that if supervisors and teachers concentrate upon the technical skills of teaching in a systematic structure, the purposes of instructional supervision can be met.

Further, the participants have placed both the behavior of supervisors and training programs for them into systems models. These involve training supervisors to use a systems approach in their supervision, and to use various tools of supervision, such as educational and social psychological principles, group processes, classroom observation instruments and the supervisor-teacher conference.

Technical skills of supervision have been developed, along with specific protocols, to train supervisors to use the technical skills of teaching in teacher observation and conferencing. Field tests of the latter will be reported. It will be shown that the component-skills-of-teaching approach provides teachers and supervisors with a useful foundation for supervision.

The symposium will be presented with the following areas of concentration: 1) abstracting technical skills of supervision and the development of a systems model for organizing supervisors will be discussed by Delbert K. Clear, of the University of Wisconsin, Milwaukee, in his paper "Functions and Skills of Instructional Supervision"; 2) examining extant analysis of teaching instruments and procedures to determine which are most useful to supervisors will be discussed by Grace Lund, of the University of Wisconsin, Milwaukee, in the paper "Evaluation of Classroom Observation Instruments"; 3) analyzing supervisory conferences, developing a list of potentially useful conference foci, and constructing a taxonomy of conference strategies will be discussed by I. T. Johnson of the University of Wisconsin, Milwaukee, in his paper "Analyzing Supervision Conferences"; 4) training supervisors to use a systems approach will be discussed by David B. Young of the University of Maryland in the paper "Training Instructional Supervisors"; 5) applying the elements of the systems approaches and component skills of teaching and supervision in an elementary school is the topic of George R. Blommel, of Menomonee Falls, Wisconsin, Public Schools in his paper "Initial Evaluation of a Systems Approach to Supervision".

The intent is to keep formal presentations to a minimum, with each participant taking not more than ten minutes to present an overview of his work. The discussants, Robert H. Pinney, of the University of Washington and G. Bradley Seager, Jr., of the University of Pittsburgh, will be asked to address their remarks and questions to the panelists rather than make separate, and perhaps unrelated, addresses. A substantial block of time will be reserved for the participants to interact with each other and the discussants to establish tight connections between their respective work. Lastly, audience interaction with the panel will be encouraged. The symposium chairman will make every effort to draw responses from the audience so that the panelists might be prompted to refine their work and ideas in light of the experiences and work of a large number of fellow researchers and practitioners.

CURRENT RESEARCH RELATED TO THE YEAR-ROUND SCHOOL

ROBERT E. SUTTON, Lemon Grove School District, California, ORGANIZER

The Year-Round school plan is being implemented in various forms throughout the United States. The most popular and feasible plan appears to be the 45-15 plan whereby pupils attend school 45 days and are off 15 days completing a school year with 180 days of actual attendance. The objectives of the symposium will be to present information and research relative to: 1) the need for year-round schools; 2) the educational advantages and disadvantages of the year-round school; 3) the educational achievement of pupils under the year-round plan; 4) attitudinal changes in pupils, parents, and teachers as a result of the year-round plan; 5) economic factors involved in the year-round plan; and 6) problems of initiating the year-round school plan.

Albert W. Lantz of La Mesa-Spring Valley School District will present information from that district regarding the implementation in that district in his paper "Year-Round School in La-Mesa-Spring Valley District".

Two of the district's seventeen elementary schools and one junior high school began the year-round program in July of 1971. Information will include current student achievement test data, parent reaction, and staff concerns and problems.

Leslie Six of Chula Vista School District has prepared the research design for determining student achievement and attitude changes resulting from the implementation of the 45-15 year-round education plan begun in July, 1971, in four of the district's twenty elementary schools. Dr. Six will present statistical data regarding test comparisons on student achievement, student and staff attitude changes, and parent acceptance of the program in the paper "Achievement and Attitude Changes".

In the paper "Operating Costs and Staffing Patterns" by William Rogge of Valley View Public Schools, how that district originated the 45-15 year-round plan and is now in the second year of operation, will be discussed. Mr. Rogge will present statistical results of a longitudinal study of student achievement under the year-round plan. He will also provide information relative to operating costs and staffing patterns resulting from two years of program operation.

Mr. Rogge will review the intricate planning that preceded the entry of the Valley View District into a year-round plan. In addition, the construction and administration of community surveys and staff surveys will be discussed.

Paul Radenheimer, of the University of Arizona, is currently reviewing literature and research relating to year-round schools. He has also acted as a research consultant to the La Mesa-Spring Valley School District which recently adopted the year-round school plan. Mr. Radenheimer will present a review of the literature which will trace the development of year-round schooling attempts from the early 1920's down to the present day. His paper is titled "Literature and Research Relating to Year-Round Schools".

The importance of this symposium may be shown by noting that the possibility that this organizational pattern may well revolutionize the future calendar of school operation. The plan is a viable alternative for taxpayers who refuse to pass bond issues while expensive school buildings stand idle.

The plan also provides parents with a variety of vacation and rest periods during the year. The traditional crowding of vacations into the three summer months has created over-use of all types of recreational facilities from city parks to wilderness areas.

Research data related to the educational advantages of the year-round program as implemented in three major suburban school districts from July to April, 1972, for approximately 50,000 students will be presented for examination and discussion. The symposium will also shed light on the effects of the 45-15 year-round school plan on the

2,000 classroom teachers conducting the program. The work options provided by this plan are extensive and need the kind of educational exposure that the AERA Conference provides.

Symposium participants will bring sample materials from districts presently involved in the 45-15 year-round program for distribution at the conference.

ETHNIC MINORITY PERSPECTIVES ON THE EVALUATION OF EARLY CHILDHOOD EDUCATION PROGRAMS

W. RAY RHINE, University of Missouri, St. Louis, ORGANIZER

The purpose of the symposium is to present ethnic minority perspectives and recommendations on the evaluation of early childhood education. The ethnic minorities are demanding that their "experience," values, and goals be represented in the social institutions that influence the lives of their children. They contend that the schools should support cultural pluralism in American society rather than attempting to indoctrinate all pupils with the values of the dominant Anglo middle-class culture.

Ethnic minority spokesmen are insisting on a re-examination of the value assumptions that underlie educational practice and evaluation. To obtain favorable scores on many existing instruments, ethnic minority pupils must evidence Anglo middle-class values and behaviors at the expense of denying the values of their own ethnic group. They want instruments that reflect the ethnic values.

Another suggestion is that measurement constructs should be more consistent with the social reality experienced by ethnic minority pupils. For example, the internal locus of control orientation (i.e., personal acceptance of responsibility for success and failure experiences) is assumed to reflect the belief that a person possesses power over the consequences of his behavior. However, for a minority youngster growing up in the poverty of the ghetto, an internal control orientation may be an inaccurate, maladaptive, and excessively intrapunitive distortion and denial of the true conditions of his environment. Indeed, an external control orientation attributing the responsibility for success and failure to other people and forces may be a much more accurate perception of the environmental forces that really do act to shape and control the outcomes of his behavior.

Many of the issues to be discussed have been vigorously debated and clarified in Project Follow Through evaluation policy and planning sessions attended by Drs. Barnes, Ramirez, and Rhine. For the past three years, Rhine was a member of the Stanford Research Institute staff that has planned and implemented the national evaluation of the Follow Through. Barnes and Ramirez have been frequent consultants to the project. Follow Through is a comprehensive experimental education program to maintain and enhance the benefits of Head Start for disadvantaged children in grades K, 1, 2, and 3. Approximately two-thirds of the Follow Through population of 70,000 pupils are from ethnic minority groups.

Drs. Barnes and Ramirez, the Major Presenters, have served as ethnic minority consultants for Head Start and Follow Through. In addition, each is chairman of a Social Science Research Council subcommittee on innovative approaches to measurement for ethnic minority children.

Edward J. Barnes, Associate Dean of the College of Liberal Arts and Sciences and Director of the University Community Educational Program, University of Pittsburgh, will present the paper "Evaluation Research and the Education of Oppressed Minority Group Members."

The evaluation of education programs, especially childhood education, cannot be limited to measures of classroom achievement. The focus must be enlarged to include the whole person-in-a-social-context whose academic and personal growth is affected by the quality of his environment. A child's self-concept is a significant aspect of his growth and cannot be separated from his performance in the classroom.

Evaluation research that seeks to assist in understanding and resolving social problems must become more explicit about the underlying assumptions, values, and goals of those who construct the instruments. There are multiple subcultural groups varying in world view, styles, modes, values, etc. Education and evaluation research must be appropriate for each respective group.

The exclusion of ethnic minority values from the society and from the schools is a primary reason for the failure of the schools to educate ethnic minority children. Evaluation research can assist the schools in serving all peoples of the society instead of representing and guarding the "White Anglo-Saxon ideal."

Manuel Ramirez, Associate Professor of Mexican-American Studies and Psychology and Director, Bicultural Bilingual Project, University of California, Riverside, will discuss "The Implications of Cognitive Styles and Cultural Democracy for Evaluation Research."

Cultures and values of minority groups in the United States, especially those of Blacks, Indians, and the peoples of La Raza, have been viewed as pathological and inferior. Consequently, the education evaluation models applied to ethnic minority children have been based on inappropriate assumptions that are damaging. The result of ignoring culturally unique learning and incentive motivational styles is the alienation of minority group children from the schools.

The new philosophy of cultural democracy insists that institutions must change to be consonant with the learning and incentive-motivational styles of ethnic minority children. In a compatible learning environment people will not be required to reject their identity to be considered successful and well adjusted.

Witkin's concept of field dependence-independence seems promising for implementing cultural democracy in evaluation research. Our preliminary research indicates that most Chicano children, especially those from traditional environments, are field dependent when compared to Anglo children of the same age, sex, and socio-economic class. The results of current research on acculturation and cognitive styles in three Chicano communities in California should help to develop more effective instructional programs for both field dependent and field independent children.

Stanley Crockett of the Western Behavioral Science Institute will discuss these papers.

National early childhood education intervention programs have become vehicles for the expression of ethnic minority values and demands for social justice. The controversy over the evaluation of programs such as Head Start and Follow Through reflects the deeper struggle among stakeholder groups for control of funding and decision-making on program operations.

This symposium is presented in the hope that articulation and discussion of ethnic minority concerns and recommendations may assist in moving beyond confrontation to more productive discussion and resolution of these heated and divisive issues in American education.

INCREASING THE EFFECTIVE USE OF ANALYSIS IN SCHOOL DISTRICT PLANNING

SUE A. HAGGART, The Rand Corporation, ORGANIZER

The objectives of this symposium are to investigate the nature of the resistance to the use of analytical techniques in school district planning and to suggest steps that may be taken to increase the effective use of analysis. The participants agree that modern analytic and management techniques do offer one way in which educational planners and administrators may begin to respond more effectively to some of the challenges facing education; they differ, however, in their approach to developing and using these techniques.

It is the purpose of this symposium to delineate these different approaches for increasing the use of analysis and to encourage active audience reaction. The four fifteen-minute presentations are to be followed by two ten-minute discussions. The discussants are: Donald M. Levine of the Ontario Institute for Studies in Education, Toronto and James S. Dyer of the School of Management, University of California at Los Angeles.

"Organization by Program as a Way to Increase the Use of Analysis in School District Planning," will be presented by Sue A. Haggart, The Rand Corporation. Current district organization does not provide the environment necessary for the development and use of analytical techniques in educational planning. This environment may, in part, be characterized by an adequate supply of timely data, appropriately analyzed, and a clearly discernible flow of decisions. The organization should facilitate both the collection of the data and the communication of the results of the analysis.

More serious, however, is the likelihood that the current organization acts as a barrier to the acceptance of the results of analysis. This paper defines 'program', develops a program-oriented organizational structure, and compares this structure with the current organizational structure. The purpose is to demonstrate how organization by program enhances the environment for analysis and promotes the acceptance of analysis as well as the results of analysis.

"Educational Planning with Organizational Development (OD): A People Involving Approach to Systemic Planning," is presented by Donald M. Levine of Ontario Institute for Studies in Education, and C. Brooklyn Derr of Graduate School of Education Harvard University.

Recently, administrators in educational systems have attempted versions of program budgeting, management information systems, operational planning, and even program and policy analysis. Yet the application of strategies for achieving more rational planning and management often have shown little substantive progress. A central reason has been the inability to make planning and management approaches understandable and meaningful to personnel throughout the school district organization. This paper explores an organic theory of planning which incorporates organizational development (OD) techniques for making analysis and planning activities more people-sensitive. A step-by-step plan for utilizing both formal planning methods and organizational development (OD) in a school district is described.

"Heuristics: A Step Toward Getting There" is the topic of G. Ernest Anderson, Jr., School of Education, University of Massachusetts.

Mathematical programming techniques allow us to find optimal solutions to a number of well-specified problems. These techniques are not yet widely used in education for many reasons, ranging from simple lack of knowledge to political unacceptability of mathematically "optimal" solutions.

In the spirit of Operations Research, abetted by the computer, it has been possible to set up situations in which school administrators can try out plans they are considering, examine probable consequences, and modify plans accordingly, all at high speed, low cost, and without disturbing present school operations. The best known example of this is the "simulation" run in school scheduling, other examples include establishing school district boundaries, bus routing, facility planning, and staff utilization. These heuristic techniques, while mathematically primitive, are effectively useful today, and are a step toward the eventual use of more sophisticated techniques.

"Evaluation of On-Going Programs to Improve School District Planning," will be presented by Marjorie L. Rapp, The Rand Corporation.

School districts have traditionally engaged in two kinds of evaluative activities. The first is an assessment, generally annual, of the current status of student achievement. The second more properly falls under the rubric of research. It can be defined as special studies individually designed to determine the effectiveness of some program.

In today's more sophisticated educational environment these activities do not give the decision maker the necessary information for program planning.

This paper presents a model for continuous, systematic evaluation of on-going programs, and specifies data needed for decision making in the areas of program adoption, curtailment or expansion.

The message of this symposium can be distilled into one thought. If more effective use of analysis in school district planning is to be realized, there must be a meeting of the minds between the practitioners and the users. Achieving this end will require open discussion aimed at identifying the problems and seeking their resolution.

THE NATIONAL EDUCATIONAL FINANCE PROJECT—A SUMMARY REPORT

GERALD R. BOARDMAN, University of Florida, ORGANIZER

The National Educational Finance Project (NEFP) has been a major research effort involving a comprehensive study and a thorough analysis and critique of all state systems of school finance. The NEFP has been a cooperative endeavor involving state departments of education from each of the states, the USOE, and cooperating universities and local school districts. Funds came principally from Title V, Section 505, of the Elementary and Secondary Education Act; the project has been administered through the Florida Department of Education.

Specifically, the purposes of the project have been to: (1) identify the dimensions of educational need in the nation; (2) identify target populations with special educational needs; (3) relate the variations in educational needs and costs to the ability of school districts, states, and the federal government to support education; (4) analyze economic factors affecting the financing of education; (5) evaluate existing plans of school financing; and (6) construct alternative school finance models and analyze the consequences of each.

The primary focus of this symposium will be on the following research products of the study: 1) Status and Impact of Educational Finance Programs; 2) Educational Programs and Services—Needs and Costs; 3) Fiscal Capacity and Educational Resources; and 4) Alternative School Finance Models—A Computer Simulation.

The presentations will focus on both the process and product of the NEFP research efforts in the four areas listed above.

"Status and Impact of Educational Finance Programs" is the topic of Kern Alexander, University of Florida. All state school finance programs, including small categorical grants, in each of the 50 states have been classified and measured as to the extent of their equalization. Profiles have been developed to illustrate the impact of local, state, and federal revenues in school districts with varying levels of fiscal ability. An additional facet includes a comparison of the revenues available to a selected group of urban, suburban, independent cities, and rural areas. Consideration was also given to the equalization potential of non-property taxes as a potential major revenue source for financing local schools.

The federal aid studies centered on the extent of the equalization effect of federal programs both among and within states. One sub-study compared allocations of ten major federal aid programs to the personal income of states as a measure of equalization. Other studies measured equalization of federal programs in terms of both pupil achievement test scores and personal income.

"Educational Programs and Services—Needs and Costs" will be presented by K. Forbis Jordan, University of Florida. In this facet of the study a selected number of educational programs were identified. The sample school districts were chosen on the criterion of reputational best practice, which indicates that they cannot be construed as representative. Future programs for various levels of educational programs were projected. Cost analyses were conducted of existing programs. Present and potential target populations were identified. Projections were made on the basis of these cost and population data except in those instances where the research process did not yield reliable data for projection purposes.

Programs included pre-school through community college and adult education. Services consisted of transportation, food services, and capital outlay.

"Fiscal Capacity and Educational Resources" will be discussed by Richard Rossmiller, University of Wisconsin. The primary objective of this phase of the NEFP research was to identify differences in relative fiscal capacity of school districts serving areas of varying economic and demographic characteristics and to assess fiscal capacity in terms of expenditures for public service by all units of local government.

Additionally, consideration has been given to the present effort being made by various states and their fiscal potential in terms of existing and potential usage of various revenue sources at the state level.

"Alternative School Finance Models—A Computer Simulation". Among the products of the National Educational Finance Project is a modeling or decision-making process which may be used by real-life policy makers or in the instructional mode for classroom situations.

The process encompasses a data bank with a full range of information dealing with pupils by program, fiscal resources and related evaluative data for a prototype state; decision-making opportunities; and output reflecting the impact of these decisions on the state and its local districts. The long term benefit of the process is reflected in its potential of being implemented in an actual state when basic data have been gathered.

The underlying assumption is not that there is one best program, but that various alternatives are available. The best choice will be dependent upon the desired level of taxpayer equity and access to fiscal resources.

OPERATIONS RESEARCH–SYSTEMS ANALYSIS IN EDUCATIONAL PLANNING

JAMES E. BRUNO, University of California, Los Angeles, ORGANIZER

The use of techniques and methodologies of systems analysis—operations research is being accorded increasing emphasis by school administrators responsible for school district management and planning. Several graduate schools of education already have or are contemplating developing curricula in these areas for the preparation of school administrators. The purpose of this symposium is to report some of the more recent and important applications of operations research to problems in school district planning. The papers themselves will cover various facets of school district management and will include quantitative applications to instructional evaluation, conflict resolution class scheduling in education. The following is a description of each presentation.

"A Mathematical Programming Approach for Matching Faculty to Courses" will be presented by Gary M. Andrew, University of Colorado. The problem of matching available faculty to courses, research and administrative assignments which must be filled is constantly being faced by deans, department heads, and faculty committees. This paper defines the goals and constraints involved in assigning faculty to courses. A procedure for setting preference and effectiveness ratings is described.

Once the problem is formulated, the Ford-Fulkerson dual transportation algorithm, based on mathematical programming procedures, is used to obtain particular assignment solutions. A recent application of the model to assign 40 faculty members in an electrical engineering department is used to illustrate the generalizability of this approach.

"Analysis of Constituency Demands for Curricular Electives in Public School Systems" is the topic of James F. McNamara, University of Oregon. The purpose of this paper is to illustrate a mathematical model that can be used by school districts to evaluate alternative decisions about curricular electives in public school systems.

The model utilizes linear programming techniques to construct constituency preference functions and to determine optimal curriculum electives for each constituency. Alternative curricular decisions are then evaluated using a conflict matrix based on teacher availability, curricular electives, budget considerations and instructional resources.

A recent application of the model in Oregon is used to demonstrate the generalizability of this approach for public school systems.

"Reorganization of Large Urban Districts" will be discussed by Daniel B. Davis, Washington Internship Program. This exploratory planning study develops and applies two mathematical programming models, an interactive model and a heuristic model, for the reorganization of large urban school districts. The models maximize an objective function subject to political, social, and economic constraints, utilizing census tract data as the basic unit of analysis.

The objective function maximized by these decision-oriented approaches is that of heterogeneity of racial composition, although these two models are general enough to be applied to any kind of redistricting problem with different objectives and/or constraints. The heuristic model is similar to the linear programming approach used to re-draw congressional district boundaries. Results from actual application of the model for the Los Angeles City School District are reported.

"Incorporation of Utility into School District Performance Contracts" will be presented by James E. Bruno, University of California, Los Angeles. There is a current need in education, due in part to recent emphasis on accountability and performance contracting, for a method of evaluating achievement gains for the purpose of compensation of contractors. The term contract used in its broadest sense, could include a state-school district contract, or a school district-teacher contract or what is presently receiving increased attention—a school district-private corporation contract. The interval shift analysis which maximizes Net School District Utility is a simple procedure based upon linear programming techniques which permit school districts or the contractee to establish a goal in standardized intervals and define some utility for the interstandardized intervals transitions. The model then calculates the maximum Net School District utility for two transitions—from the initial to the achieved distribution and from the initial to the goal distribution. The ratio of the Maximum Utilities Net, initial to achieved and initial to goal is a quantitative continuous measure and assessment of the degree to which the goal has been met and can be directly used in the compensation of the contractor.

"Decision Parameters and Attitudes of Public Administrators and Planners" will be presented by Bob L. Wynia, University of Oregon. The purpose of this study was to determine decision parameters and attitude of public administrators and planners who now hold civil service positions (above G.S. 14) in federal government agencies and who are responsible for the administration and planning of educational, public welfare, defense and other government programs.

These results were then compared with national samples of political influentials and the general electorate to determine differences in (1) economic equality, (2) social and ethnic quality, (3) democratic values, (4) cynicism toward government and (5) sense of political futility between these bureaucrats and the constituencies they serve.

ORGANIZATION DEVELOPMENT: A DESIGN FOR CHANGE

SAMUEL G. CHRISTIE, Institute for Development of Educational Activities, Los Angeles, ORGANIZER

The overall goal of organization development is to integrate personal needs with organizational goals. As with any human enterprise, there are differences of opinion on how to achieve this integration. Some approach the problem from the individual perspective, seeking ways to help individuals achieve greater personal satisfaction in the organizational setting. The assumption is made that meaningful achievement of organizational goals cannot be made until the personal needs are satisfied.

Others approach the problem from the organizational perspective, giving more emphasis to the achievement of organizational goals through the adoption of systematic procedures and broadening the participation of members in decisions that affect them. The assumption is made here that participation in decisions on issues that concern them will satisfy needs of individuals sufficiently to achieve the goals of the organization.

The purpose of this symposium will be to inform both participants and observers of the results of various efforts to promote change in schools from an organization development framework; to develop further understanding of the purposes, differing strategies, successes, failures, advantages and limitations of OD in an educational setting.

To achieve these objectives the symposium will promote an interchange between individuals working from this problem solving perspective, but who are performing in different roles, that of consultant-change agent, developer, and user, and giving different emphases to their work.

The basic issues around which these differences revolve are those of conflict versus consensus, systems planning versus humanism, and ends versus means. The questions generated by these differences include the following: 1) Is conflict counter productive, something to be resolved or something to be encouraged, to be used as a vehicle for change? 2) Is it productive for change agents to concentrate primarily on developing rational procedures, on systems planning, or primarily on the humanistic element in organizations, on developing interpersonal relationships? and 3) How can the OD effort be expanded so that a significant portion of the 20,000 school districts in the United States be reached? Can OD be packaged?

"Where OD for Schools Needs to Go" will be presented by Richard A. Schmuck, University of Oregon. Although training in organization development for schools is a plausible and useful vehicle for humanizing staff and classroom climates, such interventions have only just begun and are immature, need to be broadened to include students, need to be described more objectively and in more detail; and should be disseminated to a much wider array of schools.

Research and development on OD in schools is less than ten years old. Most of the early efforts in education have been narrowly guided by a set of assumptions involving trust and truth. Although this "tender" model has paid off, efforts should be made to develop and test interventions guided by other models such as those of *power and conflict, product-accountability,* and *technostructural.*

Whatever model or combination of them is used, more projects should be tried in which students are included as trainees along with the professionals.

OD consultants in schools should also describe their technique much more explicitly. Detailed descriptions are needed so that other less experienced consultants can use them, experimental replications of techniques can be carried out, and creative adaptations can be made for future designs.

Most successful OD interventions in schools have apparently taken place in conventional suburban or small city districts with fairly substantial economic and attitudinal support for schools. The thrust for the future should turn toward large, urban school districts and "alternative-culture" schools aiming at the creation of highly individualized, open learning environments.

Finally, more projects deliberately designed to establish groups of skilled OD trainers in school districts are needed. Assuming that it is feasible to install internal organizational specialists in many districts, each such group will gain legitimacy and influence as it is formally and regionally linked to other similar groups.

"The Role of the Internal Change Agent in OD" will be presented by Car M. Foster, Chairman, Dept. of Organizational Development, Louisville Public Schools. Organizational Development rests on a set of basic assumptions about people and organizations. These assumptions involve the difficulty and complexity of change; coping with conflict resulting from change; a change for personal meaning, growth, and commitment; and a development of interpersonal conditions involving trust, openness, spontaneity, and participation.

Basic to the strategy in OD is broad based participation in the effort. This quite naturally leads to a concern with role relationship; established relationship between peers, between different status levels within the system, and relationship between consultants and organizational leaders.

Much concern has been voiced about the dependency relationship between the members of the organization and the consultant. The nature of OD is such that this dependency on outside agents is somewhat minimized.

One strategy in minimizing this still further is to create an in-house agent, a person to facilitate, to support, to encourage the OD effort, to help insure that changes continue after the consultant has gone.

This discussion will center upon the efforts of one district to promote change by creating such a position.

"The Change Agent as Advocate in Issues of Racism and Student Activism" will be discussed by Simon Wittes, Educational Change Team, Ann Arbor, Michigan. There is an intimate relationship between conflict and change. Although most change agents working within an OD framework would agree with this statement, there is much less agreement on the level of conflict that is desirable.

If too much emphasis is given to conflict resolution, the system will only make minor adjustment in the status quo.

Conflict can be delibating, but it need not be. Conflict is necessary for change and the more drastic the change the more intense the conflict must be before change will occur.

Fear of confrontation and conflict tend to smother issues such as racism and student participation in school policy.

The Educational Change Team is a group of consultants working within an OD framework as they assist educational systems in times of internal conflict and crises.

This report will be a case study of an intervention in such a school system over a two year period. The talk will describe a systems approach using a team of consultants, each assigned to different role groups, and will report on the results of this effort.

"The Product as Change Agent: Advantages and Limitations" is presented by Roger Rasmussen, Institute for Development of Educational Activities. There are two distinct advantages which may be incurred in a successful attempt to "package" OD. First, and most important, it can be disseminated to a vast audience since it would not be dependent on close contact with outside consultants. Second, by necessity, it places a greater reliance on the members of the system. They must solve their own problems, must draw upon their own resources.

This discussion will concern a two year project by The Institute for Development of Educational Activities to develop and test such a package. In particular, the report will deal with the problems of initiating collaboration of the school staff and systematic attack on their problems without direct intervention. It will discuss the effects of strategy utilizing teachers selected by their peers to serve as a "Development Team."

"The Product as Change Agent: The Process of Development" will be discussed by Adrianne Bank, Institute for Development of Educational Activities.

Organizational development and product development in schools began approximately ten years ago. Up until the present time, the paths have not crossed even though the individuals working within each of these fields have many things in common. Organization development, in the words of Bennis, is a design to bring about change through the analysis of experienced behavior.

Product development has been concerned with ways to produce materials that can achieve desired effects. In both fields there has been a commitment to work with educators in the schools. In OD the intent is for immediate effect and the purpose is to bring about change in the entire school. In product development the intended effect is for the future, the purpose being to test the effectiveness of materials which had been developed—usually classroom materials.

The Institute for Development of Educational Activities project to develop a product broad in scope, a product with the purpose of initiating OD brought together individuals trained in both fields. This paper will report on the process of developing the materials on conflicts generated by the different purposes, and the complimentary aspects of organization and product development.

These papers will be discussed by Matthew W. Miles of the State University of New York, Albany, and Charles Z. Wilson of the University of California, Los Angeles.

REORGANIZATION OF NATIONAL MINISTRIES OF EDUCATION: A CROSS CULTURAL EXAMINATION

NAFTALY S. GLASMAN, University of California, Santa Barbara, ORGANIZER

Developing nations seeking to modernize their social and economic institutions have been slowed by organizational infrastructures incapable of supporting differential and evolving demands of a changing society. Educational reforms in these nations have been hindered because of similar difficulties. In an effort to overcome some of the difficulties, attempts were made in a number of nations to reorganize the national educational ministries. One objective of the symposium is to report on recent efforts of such reorganizations. Another objective is to examine the various cases in relation to theoretical and contextual foundations of organizational decision making and relationships among administrative roles. In this sense the symposium touches upon specific issues such as real and optimal degrees of centralization of decision making; degrees of rational and functional authority structures; extents of integration of pedagogic, administrative and budgetary aspects of education ministries' roles; and structures of bureaucratic communication networks and workflows.

The symposium consists of research reports from two South American nations and four Asian nations, which together represent a sufficiently large but manageable range of stages of economic and social development. The sample includes educational reorganization cases which are at different stages of implementation and which have achieved different measures of success. The six nations included are the Dominican Republic, Venezuela, Thailand, Pakistan, Indonesia and Israel. The symposium consists also of two discussants' presentations which constitute attempts to compare phenomena in the developing nations to similar phenomena in the United States. The American examples include one case at the state level and one case at the local level.

"Inter-element Conflict in Education in the Dominican Republic and its Effect on Technical Assistance Programs" will be presented by Tom Arciniega, University of Texas, El Paso. The paper uses a systems analysis approach to analyze the interaction among 3 elements: an American university, USAID coordinators, and host country counterparts. A typology of systems dysfunctions is constructed centering around conflicts over goals, evaluative criteria, professional autonomy and programs' regulations. Conclusions are related to the effectiveness of the administrative use of expertise in reorganization efforts. Recommendations are offered to increase this effectiveness.

"Organizational Reform in Educational Change in Venezuela" is presented by Mark Hansen, University of California, Riverside. This presentation is an organizational analysis of the Venezuelan Ministry of Education and its efforts since 1968 to reform the educational institution into a flexible instrument capable of supporting the qualitative and quantitative multiplying manpower demands of the nation. Pre-reform problems are identified which relate to organizational structure and administrative processes. Structural modifications created under the reform are examined. The reform is evaluated with respect to its adequacy in meeting demands being placed on the Ministry.

"Educational Reorganization in Thailand" is the topic of Leslie R. Gue, University of Alberta, Canada. This study examines the development of diversified secondary education in Thailand. The analysis deals with the role of the national Ministry of Education in the allocation of material and human resources and with the role of foreign education experts who operate in the context of international aid programs. Emphasis is placed on the organizational characteristics of temporary systems which are designed to introduce educational innovations. One major conclusion is that these systems are delicate and vulnerable units with inherent problems in the organization.

"Educational Administration in Pakistan: A Study of Reorganization and Reform" will be presented by Mohammad Wasiullah Kahn, University of California, Berkeley. The paper summarizes national and provincial efforts since independence to reorganize the system of educational administration. It reviews recommendations made by several governmental committees and the extent of their implementation. The focus is on pedagogic, administrative and budgetary functions of the Ministry of Education and Scientific Research in Islamabad and in the 5 provincial education departments. Specific issues discussed are the centralization-decentralization dilemma, communication in decision making, moral building and change. Conclusions are drawn with regard to increased efficiency and facilitation of educational development.

"Administrative Strategies for Promoting Quality in Indonesian Higher Education" will be discussed by R. Murray Thomas, University of California, Santa Barbara. This presentation consists of the analysis of (a) pressures exerted to expand higher education opportunities; (b) sections of the Higher Education Law related to quantity and quality of education; and (c) organizational efforts of the Ministry of Education during the 1968-71 period to improve the quality of higher education. Emphasis is placed on the formulation of the consortia of colleges, the designation of several institutions as Centers of Excellence to guide the development of other schools, and the assessment of quality of institutions by Ministry appointed evaluation teams.

"Reorganization of the Israeli Ministry of Education: Conflicts and Compromises in Relationships Among Administrative Roles" will be presented by Naftaly S. Glasman, University of California, Santa Barbara. This presentation describes the Ministry's 1969-70 reorganization plans and proposals and examines them as institutional responses to changes in elementary and secondary education. It also analyzes the 1970-71 stage of the reorganization's implementation. Emphasis is placed on compromises between conflicting interests in relationships among administrative roles between and within the central office and the reorganized regional offices. One central conclusion is that selective elements of the structural change do not constitute a function of changing educational goals but rather a function of changing strategies to achieve existing goals.

Ronald E. Blood, University of New Mexico and Robert E. Stout, Claremont Graduate School will discuss the papers.

The symposium's importance is in its contribution to the further understanding of processes of organizational decision making in education and of role relationships in educational administration. The international setting allows for viewing the above in a theoretical context of comparative educational administration. More specifically, it facilitates the search for generalizations related to implications which a given stage of economic and social development has on the nature and effectiveness of education ministries' reorganization.

SUPERVISION: THE NATURE OF THE INTERACTIVE PHENOMENA

JOHN R. CRYAN, Syracuse University, ORGANIZER

It is the general purpose of this symposium to present five research reports that are concerned with supervision and supervisor training (four cite data from the Blumberg system). They represent a different take-off point for the study of supervision than typically taken in the past. Whereas heavy emphasis is frequently given to prescription, that is, what "should" and "should not" be done, the emphasis and orientation here will be behavioral and interpersonal. The supervisory process is seen as working best when it is conceived of by both parties as a collaborative, problem-solving process. Student teaching, the vehicle for analysis in the reports to be presented seems to be appropriate in this respect. The specific purposes of this symposium are to: 1) demonstrate the viability of an interaction analysis system for use in supervision; 2) demonstrate the viability of analyzing verbal behaviors during dyadic conferences as accurate and objective indices of supervisory behavior and style; 3) describe supervisory verbal behavior during dyadic conferences between college student teaching supervisors and student teachers; 4) describe supervisory verbal behavior during dyadic conferences between college student teaching supervisors and cooperating teachers; 5) investigate and assess the effects upon supervisors who engage in systematic analysis of their supervisory behavior during conferences with student teachers; 6) examine relations existing between supervisor verbal style and the quality of interpersonal relations perceived to exist between the supervisor and the student teacher; and 7) offer implications for the preparation and training of supervisors involved in the administration of teachers.

"A Study of Verbal Behaviors Engaged in by College Student Teaching Supervisors in Dyadic Conferences with Cooperating Teachers and Student Teachers" will be presented by Joseph F. Rousseau of Keene State College.

This presentation will focus upon supervisor verbal behavior during dyadic conferences between Elementary Education supervisors and student teachers, and these same supervisors with cooperating teachers in an attempt to discover if supervisors use different verbal behaviors with teachers of different status. Audio tape recordings of 63 supervisory conferences were subjected to analysis by an observer using the Blumberg Supervisory Interaction System. Percentages of specific supervisory verbal behaviors with student teachers and with cooperating teachers were compared by means of *t*-tests. Results indicated that supervisors did behave differently when interacting with student teachers than when interacting with cooperating teachers. These differences will be illustrated through a discussion of the composite matrices.

"Differences in the Verbal Behavior of College Supervisors Using the Blumberg System for Analyzing Supervisory Conferences and College Supervisors Using No Systematic Analysis" will be presented by Maureen L. Evans of Hofstra University.

This is a report of a study conducted to assess differences in the verbal behavior between college supervisors who used the Blumberg system of analyzing the verbal interaction in their supervisory conferences and college supervisors who did not systematically analyze their supervisory conferences. Eight supervisors of secondary student teachers were taught to use the Blumberg system and were then asked to tape-record and code their conferences during the second half of a college semester. A computer program was written to assist these supervisors in compiling matrices of the coded conferences. A control group of eight supervisors continued with their normal supervising practices but did not attempt to analyze their conferences. A comparison was made between the two groups with respect of proportions of supervisor-talk falling into various categories and groups of categories.

"Analysis of Verbal Interaction in Supervisory Conferences with Student Teachers" will be presented by John W. Wulff of New Paltz State College.

This presentation will describe the results of a study similar in design to the study by Evans. An experimental group of college supervisors of elementary student teachers received training in the analysis of verbal interaction, analyzed their own verbal interaction, and considered the results of the analysis of their verbal behavior. The central purpose of involving college supervisors in implementing an instrument (Blumberg's Supervisory Interaction System) to analyze their verbal behavior is to improve their instruction of the student-teacher. The questions to be answered during this discussion are as follows:

1. Do supervisors modify their verbal interaction after training?
2. Is the student-teacher aware of such a process? Data from this and the preceding investigation should provide data in support of more systematic programs of preparation for supervisors.

"Supervisor Verbal Style as Related to the Quality of Interpersonal Relations" will be presented by John R. Cryan of Syracuse University.

Data were obtained from 25 college student-teaching supervisors and their student teachers in an attempt to investigate the relationships between the supervisor's verbal style and:

1. The quality of interpersonal relations existing between the college supervisor and the student teacher;
2. Student teacher perceptions of the college supervisors verbal style.

Approximately 120 audio tapes were classified as to verbal style by the Blumberg Supervisory Interaction System. Student teacher perceptions of the quality of their interpersonal relations with their supervisors was assessed through use of the Barrett-Lennard Relationship Inventory. A third instrument, "The Teacher Perceptions of Supervisor-Teacher Interaction" scale (developed by Blumberg) was also administered to the student teachers.

Multiple regression analysis of the data provided support for the notion that supervisors need to pay considerable attention to the climate and interactive nature of their supervisory confrontations.

"Interpersonal Perceptions as a Factor in Teacher Perceptions of Supervisory Style" will be presented by George A. Churukian of Virginia Wesleyan College and John R. Cryan of Syracuse University.

It was the purpose of the study to establish whether or not teacher perceptions of supervisor style were related to the teacher perceptions of the quality of their interpersonal relations with their supervisors. The point of view taken for this study and different from similar studies in the past was that teacher perceptions of the supervisory style would be dependent upon the perceived quality of the interpersonal relations. The establishment of interpersonal relations was seen as occurring independently of productive interaction.

Graduate interns (elementary and secondary) working with master teachers, in an Urban Teaching Program provided the data for this research. Each intern was asked to describe his interpersonal relations with his master teacher, on the Barrett-Lennard Relationship Inventory. Interns answered a second questionnaire about supervisor verbal style. This questionnaire (by Blumberg entitled "Teacher Perceptions of Supervisor-Teacher Interaction) consisted of non-evaluative items descriptive of the supervisor's verbal behavior as "perceived" and "desired" by the intern. By comparing the "perceived" and "desired" responses a discrepancy score was developed and used as the dependent variable. The results indicate the need for further identification of required competencies in supervision as a means of increasing supervisor effectiveness.

The educational importance of this symposium lies in the fact that it points to the complex and interpersonal nature of supervision. Beyond that, it offers data in support of the need for supervisory training which should be thought of as directly focusing on the behavioral patterns and communications climate in a variety of supervisory situations rather than in the usual hit-or-miss fashion.

Arthur Blumberg of Syracuse University will discuss the papers.

SYMBOL MANIPULATION AND INTERNALIZATION IN THE TRAINING OF EDUCATIONAL MANAGERS FOR PLANNING

JOHN M. GOODE, American Management Association, ORGANIZER

Although education has greatly increased its concern with planning during the past few years, the implementation of planning has been subject to many difficulties. One of the most troublesome problems that has faced the planner is that of making planning a way of organizational life and not just a semantic exercise that is applied only on limited occasions.

It is the purpose of this symposium to consider this problem by examining two viewpoints of educational change and their implications in a model situation. These viewpoints are: (1) That organizational change is accomplished best by changing people first, (2) People and organizational change must be concurrent.

"Leadership and Planning: A Model" will be presented by Raymond E. Klawuhn, American Management Association. This paper will present a model of planning implementation that makes use of the concept that for successful planning, the organization must be changed

at the same time that people are changed. Specific implementation problems will be noted and discussion will be invited.

"The Model and Reality" will be presented by Irving Herrick, Maryland State Department of Education. The methods of implementing a strategic planning system in a state department of education will be described. The implementation strategies will be discussed in terms of organizational change strategies and/or people change strategies.

"An Analysis of Reality" will be presented by Lynn Tanner, Syracuse University. This paper will present an analysis of the change of attitudes that accompany the implementation of a strategic planning system in a state department of education.

DIVISION B:
CURRICULUM AND OBJECTIVES

PAPER SESSIONS

AESTHETIC AND MORAL CONCERNS

Poetry Instruction: Its Effect on Attitudes Toward Literature and the Ability to Write Prose

PHYLLIS P. SHAPIRO, Emmanuel College; BERNARD J. SHAPIRO, Boston University

Previous research has shown that children could be taught to write poetry. The present study investigated the effect of such instruction on attitudes toward literature and the ability to write prose. Four fourth-grade classes were randomly assigned to experimental groups receiving the poetry instruction and corresponding control situations. Over the six-week treatment period, the experimental group made statistically significant gains in both tested areas, the control group making such gains only in prose writing. Comparatively, analyses of covariance indicated the superiority of the experimental group both in the ability to write prose and more positive attitudes toward literature.

Axiological Implications of the Seven Most Widely Used Ninth Grade Literature Anthologies

ELIZABETH C. JOHNSON, Greenwich Public Library System; JOSEPH C. JOHNSON II, Greenwich Public Schools

The purpose of this study was to identify the most frequently used ninth grade literature anthologies and then delineate the values occurring therein in order to classify and categorize them according to the various philosophical systems reflected by values. The study had as an overall objective to make educators aware of the significant presence of values and value themes, implied behavioral paradigms (models), as manifested in philosophical categories in general, and ninth grade anthologies in particular.

As the ninth grade reader studies his literature assignments, it is apparent that he is gleaning an unconscious set of philosophical values extracted from behavioral models.

Curriculum and School-Related Attitudes

JOEL WEISS and S. B. KHAN, The Ontario Institute for Studies in Education

Affective behaviors are increasingly being viewed as important outcomes of education. It is assumed that curricular experiences in school situations are influential in the development of students' school-related attitudes. This paper presents a review of the research literature concerned with the influence of textbooks, curriculum programs and instructional strategies on attitudes toward school, subject-matter areas, and teachers. Included will be a summary of trends, possibilities for the classroom situation, and suggestions for future research. The presentation is drawn from the chapter entitled: "The Teaching of Affective Responses" to appear in the *Second AERA Handbook of Research on Teaching.*

Toward the Development of Moral Principles: An Holistic Approach

ELIZABETH LEONIE SIMPSON, University of Southern California

Review of the scientific literature on moral judgment, as defined philosophically, reveals concern for a) the structure of the moral situation; b) interpretation of principles; and c), the ordering of values and principles constituting choices. A bi-fold theory is presented that moral development a) is related to level of phychic deprivation so that the development of autonomous, principled moralization may be interrupted, distorted, or permanently suspended by the failure of central need satisfactions which provide superordinate values, and b), is dependent upon the development of empathy through trial by fantasy. Correlational research using school samples is described and results reported.

BEHAVIORAL OBJECTIVES

Effects on Achievement of Possession of Behavioral Objectives and Training Concerning Their Use

JEAN A. MORSE and MURRAY H. TILLMAN, University of Georgia

Two levels of training involving information about behavioral objectives were followed by a learning task measured by test items which measured objectives which had been supplied to some subjects, along with other test items measuring material for which no subject received objectives. Subjects who received objectives performed better on test items which measured objectives, and performed better on those items than did subjects who received no objectives. These results are viewed as consonant with the mastery-learning model. The training program led to more favorable attitudes about behavioral objectives, but did not facilitate utilization of the behavioral objectives.

The Effect of Behavioral Objectives on Student Achievement

JAMES D. LONG and SCHUYLER W. HUCK, University of Tennessee

The efficacy of behavioral objectives in improving student achievement was assessed in a college setting. The *S*s were 19 senior and graduate students enrolled in a research course in Educational Psychology. *S*s randomly assigned to two groups were separated before a class session. One group received a list of precise instructional objectives, while the other group discussed an unrelated topic. The two groups were reunited, exposed to the same lecture, and then administered a 12-item quiz covering the day's lesson. Results of an analysis of covariance revealed that behavioral objectives had a desirable effect on student achievement.

Assessment of Cognitive Behavioral Objectives: An Essential Step in Curriculum Development and Change

CHARLES A. WOODBURY, JR., and MILTON D. JACOBSON, University of Virginia

Fundamental to curriculum development and change is the assessment of cognitive needs. Such assessment is often conducted by measuring cognitive behavioral objectives with standardized tests. Do items in these tests measure selected behavioral objectives or is it necessary to create criterion referenced tasks to assess pupil achievement and their cognitive strengths and weakness? Validation data in a state-wide needs assessment study indicates tests lack sufficient validity to warrant specific test item-objective performance comparisons. Alternative means are suggested to identify cognitive status for curriculum change.

The Effects of Behavioral Objectives on Achievement of High School Students

JAMES C. YOUNG, Kern High School District; WILLIAM B. MICHAEL, University of Southern California; GRANT W. JENSEN, Kern High School District

Do behavioral objectives when implemented in classroom procedures influence achievement of high school students? After prior training in writing behavioral objectives and constructing criterion-referenced examinations, 38 teachers in nine instructional areas were assigned randomly to experimental and comparison classes that were exposed to instruction implemented or not implemented, respectively, around behavioral objectives. Significant differences in mean scores on common teacher-made posttests built around agreed-upon objectives favored experimental groups in Mathematics (grades nine, twelve) and American History for middle-track and college preparatory students. No significant differences were noted in Composition, English, a Romeo and Juliet unit, Speech, or Typing.

A Radical Look at Behavioral Objectives

JOHN R. GINTHER, University of Chicago

The difficulty of establishing a suitable level of definition of objectives is reviewed and the drift toward highly specific, and restricted statements of behavior is noted. The relevance of such statements to evaluation is acknowledged.

These matters are reconsidered in terms of evidence and 3 kinds of fact used in law. The importance of inference in law is noted and is contrasted with the apparent tendency to avoid inference in evaluation by setting the definitions of behavioral outcomes at the levels mentioned above.

Finally, the conclusion is drawn that current practices may be squeezing education out of our institutions, leaving only training programs.

BILINGUAL EDUCATION

The Language Issue and Curriculum Structure in a Developing Country: A Case Study

MONA D. VALISNO and ANGELINA RAMIREZ, Presidential Commission to Survey Philippine Education

The objectives of the Survey are to analyze the performance of the Philippine educational system and its relevance to development goals and to recommend specific ways of improving the system with particular emphasis on developing policies. Findings suggest that Philippino is the main medium of instruction at the elementary level, English and Philippino for secondary level and beyond. Educational significance of the study suggests that the Philippines will be producing citizens that will meet closely the fundamental objectives of Philippine education and students better prepared for college and the vocational-technical aspects of education.

Analysis of a Spanish Bilingual Preschool Program

THOMAS R. OWENS, Center for Planning and Evaluation, San Jose, California

The operations and outcomes of the Spanish Dame Project, a preschool ESEA Title VII bilingual program in San Jose, California for children ranging in ages between three and five, are investigated in this study. A pretest-posttest control group design involving four experimental and four control groups was implemented. Children were grouped by age and type of program treatment. Bilingual preschool students demonstrated significantly greater growth in oral language than the three control groups. No significant gains, however, were noted for the bilingual kindergarten group as compared with the control kindergarten.

A Study of the Cognitive, Affective and Socio-economic Factors Influencing Second-Language Acquisition

CLARE BURSTALL, National Foundation for Educational Research, London

This paper reports a 10-year programme of research into the teaching of French in British primary schools. A longitudinal study is being made of 18,000 primary school children, taught French within the context of a national teaching experiment. Instruments to measure achievement in French and attitudes towards learning the language have been devised and administered to the experimental sample and to appropriate control groups. Achievement in other curriculum areas, teachers' attitudes and the organizational structure of the primary school have also been investigated. The interaction of cognitive, affective and socio-economic factors in second-language acquisition is illustrated with reference to the experimental data.

CURRICULUM AND TEACHING

A Methodology for Analyzing and Evaluating Teaching Strategies in University Science Teaching

PHILIP G. BASHOOK, University of Illinois College of Medicine

The study explored an approach to analysing and evaluating strategies for teaching physics concepts at the first-year university level based on B. O. Smith and co-workers conceptual framework of teaching. There were four phases to the methodology: identifying aspects of the theoretical work potentially useful for analysing and evaluating teaching strategies; evaluating actual teaching strategies for goodness-of-fit with an ideal; and suggesting specific problems for further investigation. The study represents an attempt to bridge the gap between a recent theoretical view of teaching and practical problems of classroom science teaching.

Conceptualizing the Curricular Dimension of the Teaching-Learning Act

ROGER V. BENNETT, University of Maryland

Designing a comprehensive conceptual framework of the teaching-learning act, reviewing a research application of that framework, and evaluating the model were the purposes of this study. Theoretical constructs developed by four contemporary educators and empirical findings from several recent multidimensional studies of teaching provided foundations for the framework. Inter-relationships and interactions among curricular and instructional variables were established through conceptions of the "curricular dimension" and the teacher's "curricular organizing strategy." Application and evaluation led to the conclusion that the model provided a useful framework for planning, executing, evaluating and researching the teaching-learning act.

Some Measured Effects of a Classroom Management Model Designed for an Individualized Early Learning Curriculum

MARGARET C. WANG and MARIA MAZZA LOVE, Learning Research & Development Center

This study investigated the effectiveness of a classroom management system for implementing an individualized early learning program that included the more "structured", "free exploration", and "inquiry oriented" learning activities. The research was conducted to determine the effects of changes made in a classroom management system from a "semi-structured" to a "free"-student initiated and student centered approach. We studied its effect on student learning outcome and the manner in which learning took place. An increase in rate of task completion during the experimental period suggests that the changes made in the classroom management model carry out the curriculum objectives of the program.

The Relationship Between Elementary School Teachers' Assignments of Educational Priorities and their Practice: A Q Study

PIERRE C. WOOG, Hofstra University

This study investigated the nature of elementary teachers' priorities of behaviorally stated objectives of instruction and the practice of these priorities in the classroom. Thirty teachers, representing six school districts, were administered a one-hundred item structured Q-sort comprised of five theoretical categories; low cognitive, high cognitive, tool-skill, affective-personal, and affective-interactive. Statistical analyses revealed that twenty-six teachers ranked either the affective or high cognitive categories as most important. When these findings were correlated to classroom practice, no significant correlation, (r = -.150) was found between these objectives teachers ranked as most important and those they practiced.

EARLY CHILDHOOD

The Effects of Teacher Presence on the Language of First Grade Children

BARBARA KENEFICK, Boston University; JANE PAZNIK, Manhattan Community College

Groups of four first-graders, varied as to sex, race, and socioeconomic status, were studied in four different language tasks in the presence or absence of their teacher. Results showed that the teacher significantly limited discussion among pupils, particularly for boys and cut-off imaginative role play twice as often as she initiated it. When problem solving was required, teachers did not model solutions, as did the children, but confined themselves to a question-answer mode of discourse. However, teachers encouraged patterns of descriptive language which seem to reflect a higher developmental level than those used by children alone with their peers.

Implementation of Attention and Classification Curriculum in Day Care and Early Childhood Centers

EILEEN M. EARHART, Michigan State University

The Attention and Classification Training Curriculum designed for and field tested with Head Start classes was implemented in nine day care and early childhood centers to provide information regarding the suitability of the curriculum in the various settings. Data collected from taped interviews and questionnaires revealed that flexibility in a curriculum was considered most important by center personnel. Various organizational patterns were utilized in the centers. Younger children responded eagerly to simple short lessons while older children enjoyed the more complex problem solving activities. The training program fulfilled a need expressed by center personnel for appropriate curriculum with detailed instructions.

CEMREL'S Language and Thinking Program: Some Preliminary Pre-School Findings

HARRIET DOSS WILLIS, DAVID BUCKHOLDT, RICHARD ROBB, and WILLIAM WRIGHT, Central Midwestern Regional Educational Laboratory

This study, conducted with Head Start classes of four- and five-year olds, six experimental and six comparison groups representing both age groups, was to investigate the effectiveness of CEMREL's Language and Thinking: New Directions Program, a broadly based instructional approach in the teaching of basic language and reasoning skills. Standardized instrumentation, The Apell Test, The Pre-School Inventory and The Peabody Picture Vocabulary Tests were administered in a pre-post design. Multivariate analysis of covariance shows significant effects due to the CEMREL curriculum.

EXPERIENCE AND EDUCATION

An Inquiry into Curriculum Theories and Open Classroom Practices

NANCY L. DILL, Queens College, City University of New York

Conventional curriculum theories, refined and made more complex over the years, are for the most part based on classrooms where teachers stand at the front of the room and confront all the youngsters with the same curricular unit at the same time. These theoretical constructs are inadequate when the framework of instruction becomes an open classroom. This paper is based on observations of open classrooms at the elementary level in the New York City area, using a modified form of network analysis to record data about curricular components focused upon in various activities and events.

A Methodology of Experience, Part II: The Process of Inquiry

WILLIAM E. DOLL, JR., State University of New York, Oswego

This paper, a continuation of last year's, focuses on the process of inquiry as the key to a methodology of experience. As did the first paper it rejects the notion of pre-planned education, the result of determining ends separately from means, and begins with inquiry as a natural function of man, but a function that needs development. Education as reflective inquiry was Dewey's emphasis in his later writings (especially his philosophical ones) and is Schwab's emphasis in his. This paper will study Dewey on inquiry, and then Schwab's interpretation and extension (in a school situation) of it.

The Concept of Experience in Major Curriculum Literature: 1918-1970

GEORGE WILLIS, University of Rhode Island

This study analyzes the concepts of experience developed by nineteen influential works in curriculum theory during the period 1918-1970, considering these concepts as functions both of statements about experience and of rationales for educational practice, and strengthening the hypothesis that during this period the field of curriculum theory has been generally ambiguous about the meanings of "experience" and about consistent educational practices. Beyond this finding, the study contains implications about the development and current state of the field, about the development of school practices, and about how educational practice might actually be conducted.

FORMATIVE AND SUMMATIVE EVALUATIONS

The Structure of Formative Evaluation

JAMES R. SANDERS and DONALD J. CUNNINGHAM, Indiana University

The need for a framework for discussing and organizing formative evaluation studies is evident from a search of literature written on formative evaluation. A structure for formative evaluation studies is presented. Four categories of formative evaluation activity are defined: pre-developmental, objectives evaluation, interim evaluation, and formative product evaluation. Within each category of activity, the methods of formative evaluation are discussed. Procedural implications for the formative evaluation of any phenomena are discussed. A two-dimensional matrix, with category of activity as one dimension and appropriate methods as the other dimension, is used to summarize the framework presented in the paper.

Formative Evaluation Procedures for the In-Context Development of Instructional Materials

JUDY A. LIGHT, Learning Research and Development Center

This study is involved with developing guidelines for using formative evaluation procedures in an on-going classroom. An attempt was made to identify, control and monitor the variables which effect academic performance. An analysis of test failures was used to identify weaknesses in the instructional system. Poor test performance was attributed to either errors in the design of materials or individual study skills. The use of formative evaluation procedures in an on-going class were found to be effective in developing a satisfactory instructional system.

Summative Evaluation of a Curriculum Developed to Prepare Day Care Administrators Using Mastery/Non-Mastery Criteria

CAROLYN LIPTON ELLNER, Claremont Graduate School

The objective of this inquiry was to evaluate the effectiveness of a curriculum designed to train day care center administrators. Using criteria referenced program objectives, pretest and posttest measures were constructed. A discussion of innovative measures utilized is included. Tests were administered to *Ss* prior to participation and at the end of the program. Using explicitly stated variables, test performance was rated on a mastery/non-mastery basis. Proportion of *Ss* achieving mastery of each objective on pre- and post-measures was computed. A test of proportion was applied to determine whether changes were attributable to instruction. Difficulties in methodology and measurement are discussed.

Evaluation and the Diffusion of Educational Innovations

H. HOWARD RUSSELL and KENNETH A. LEITHWOOD, The Ontario Institute For Studies In Education

This study concerns development of a model for diffusing educational innovations in a systematic and empirically validated, effective manner. Twenty-two schools are presently involved in the project with the addition of twenty in 1971-72. The elaborative formative and summative evaluation including student performance objectives criterion-referenced testing, and use of quasi-experimental designs distinguish this study from most diffusion studies. The program is distinct from most evaluation studies because of its integral use of evaluation in the basic processes of diffusion. Results of implementation of IPI math and the Berieter-Regan Conceptual Skills Program, as well as others, are discussed.

FUNCTIONAL LITERACY

Reading Activities of American Adults

AMIEL T. SHARON, Educational Testing Service

A survey of a nationally representative sample of over 4,000 adults on what has been read during a 24-hour period is discussed as the preliminary phase in the development of life-like reading tasks to be used in assessing adult literacy. The survey attempts to answer a variety of questions about the reading habits of Americans and on how such habits promote the well-being of the individual and society. What are the purposes served by different kinds of reading? How much time is spent on various types of reading activities? And so on. Reading behavior must be studied as an integral part of an individual's general daily activities of living.

The Development of a Collection of Adult Tasks for Assessment of Literacy

REX JACKSON, Educational Testing Service

The principal focus of the paper will be on the use of (1) the results of a national survey of reading activities, and (2) a panel of individuals from such fields as industry, education, government, and journalism, to identify critical and broadly applicable reading-dependent tasks that return significant economic or other benefits to the individuals who perform them. The paper will include preliminary results from field trials of these tasks.

Variables Relevant to the Construction of Behavioral Objectives and Criterion Test Items for Reading

JAMES L. EVANS, Individual Learning Systems

A simple and inexpensive system for teaching adult literacy will be described. The system assumes reading as operant behavior, and is derived from a general model of operant learning. Relevance of the model to the construction of course objectives, terminal objectives, enabling objectives, and pre- and post-test criterion items will be described and illustrated by reference to a project to develop terminal reading objectives for the New York State Education Department.

Evaluation of Terminal Objectives in Reading

WILLIAM MELCHING, Human Resources Research Organization

Recently the New York State Education Department undertook a large scale effort to develop terminal objectives in reading. This research, described by Evans, used a concept of terminal objectives developed by Ammerman and Melching. To insure the production of acceptable reading objectives, NYSED engaged Melching and colleagues to review and evaluate the objectives. This presentation will describe the activities and problems encountered in evaluating the objectives.

Development and Evaluation of Job Reading Task Tests

JOHN S. CAYLOR, Human Resources Research Organization

This presentation will describe research to identify job reading tasks in three military career fields: Supply Clerk, Mechanic and Cook. Major methodological problems (conceptual and procedural) will be discussed. Development of Job-Reading Task Tests (JRTTs) will be described. Psychometric data relating performance among JRTT sub-tests and standardized reading tests will be presented and interpreted as indicating that performance on adult level job-reading tasks does not involve unique reading skills untapped by currently available norm-referenced reading tests.

IMPLEMENTING CHANGE MODELS

From Psychological Theory to Educational Practice: Implementation of a Matching Model

DAVID E. HUNT, JO ANN GREENWOOD and RONALD BRILL, Ontario Institute for Studies in Education; MICHAEL DENEIKA, New York Board of Education; BRUCE R. JOYCE, Teachers College, Columbia University

If psychological ideas are to be implemented into educational practice, more attention is required to the process of implementation. Likelihood of implementation is considered in terms of how the psychological idea is evaluated on four criteria—objective validity, potential relevance, comprehensibility, and feasibility—and how effectively it is translated from a psychological to an educational perspective. The analytic system is illustrated by application to the implementation of the Conceptual Level matching model (which states that the higher the student Conceptual Level, the less structure required in his educational environment) to the organization and allocation of resources in an open elementary school.

A Study of the Effects of the Installation of a Curriculum Engineering System

GEORGE A. BEAUCHAMP, Northwestern University

The study being reported is an investigation of the effects of the installation of a curriculum engineering system in a school district. Treatment effects are the organized procedures for curriculum planning and implementation functions and the specific actions taken by personnel in execution of the procedures. Specific objectives are to observe the effects of the treatments upon (1) attitudes of teachers toward teaching and participation in a curriculum system, and (2) actual behaviors of teachers as participants in curriculum functions. Analysis of preliminary data is discussed in light of the longitudinal design of the study.

An Inquiry into the Time Utilization of Curriculum Consultants, When Implementing An Instructional Innovation, as Reported by Curriculum Consultants

WILLIAM E. LOADMAN and JAMES M. MAHAN, Indiana University

This study identified the activities and relative amounts of time each curriculum consultant used in the respective activities. These data were obtained from 53 schools in the eastern United States over a one year period. Dependent measures of frequency and duration were analyzed via several one-way ANOVA's comparing data obtained from "successful" and "unsuccessful" schools (school success defined by an independent observer). The results indicate that certain activities occur significantly more frequently and for longer time periods (or less frequently depending upon the activity) in the "successful" schools. These results are of critical import to persons concerned with effective teacher-consultant coordinated behavior.

Development and Diffusion of Innovative Processes and Products

KENNETH A. LEITHWOOD and H. HOWARD RUSSELL, The Ontario Institute For Studies in Education

Objectives of the study are to generate a working model for development and diffusion of educational innovations, implement the emerging model in a typical school system and develop the model through field trials and analysis of evaluative data. The model, being tested in 17 schools, identifies the individual school as the major educational unit, the principal as central change agent and teachers, planning cooperatively, as those with major responsibility for program related decision-making. Modified working structures now consist of a liaison group responsible for facilitating cooperative interaction of project constituents for the purpose of solving common change-related problems.

MODELS OF TEACHING AS A PARADIGM FOR TEACHER EDUCATION

Models of Teaching as a Paradigm for Teacher Education

BRUCE R. JOYCE, MARSHA WEIL, RHOADA WALD, and CHRISTINA GULLION, Teachers College, Columbia University

The derivation of a series of theoretical models of teaching is described as is the structure of a teacher education program at Columbia University in which teacher candidates were instructed in teaching based on four models of teaching. Research emphasizing interaction analysis techniques is reported describing the teacher candidates' "normal" modes and their behavior when experimenting with each of the four models they were taught. The results indicate that a repertory of widely differing teaching models can be taught to the average teacher candidate despite a disparity with the "model" of the cooperating teacher.

POTPOURRI

An Identification of the Process Response to Taxonomy-Type Test Items

JAMES J. DIAMOND, University of Pennsylvania; DAVID V. WILLIAMS, Ithaca College

The present study involved an attempt to determine what cognitive strategies 11th grade pupils employ when responding to multiple-choice test items. Using a 50 item test based upon the *Taxonomy of Educational Objectives* and an earlier study of Kropp, *et al.* (1966a), data from 71 pupils were assessed. The ratings of the students' written solution strategies indicated that, for only 6 out of the 50 items was agreement obtained between the intended and actual solution process. The results were interpreted in light of the study's internal validity and the reported need for assessment of areas other than recall.

Curriculum Structure as Reflected in Perceived Cognitive and Affective Processes

JOE M. STEELE, University of Colorado; ERNEST R. HOUSE, University of Illinois, Urbana-Champaign

Three empirical dimensions of curriculum structure are presented in this study of the differences among subject areas in student perception of cognitive and affective classroom processes.

Class Activities Questionnaire items were used in obtaining data from 121 Illinois classes in Science, Mathematics, Social Studies, and Language Arts, grades 6-12.

Utilizing discriminant analysis, the dimensions are: D1, "Interpreting versus Analyzing," contrasts Language Arts versus Mathematics; D2, "Synthesizing versus Knowing," contrasts Language Arts and Mathematics versus Social Studies and Science; D3, "Exploring versus Evaluating," contrasts Science versus Social Studies.

It appears that these school subjects place distinctly different demands on students.

The Use of Smallest Space Analysis in the Development and Evaluation of a Hierarchical Chemistry Structure

RICHARD B. SMITH and TIMOTHY SCHAAP, Northern Illinois University

Junior high school chemistry was structured in a manner suggested by Gagne. A Concept Test consisting of combinations of three examples and nonexample items for each concept, and a Criterion Test which required 1) the recognition of the relationship stated in a different manner; 2) the extrapolation of the relationship; and 3) the recognition of when experimental data supports, denies or is irrelevant to the relationship were constructed. The subtests were then correlated, and the correlations subjected to Guttman-Lingoes, Smallest Space Analysis-I. The paper is a discussion of the resulting empirical pictures.

Curriculum Design and Evaluation in an Alternative Urban School

AASE ERIKSEN, University of Pennsylvania

One of the problems encountered in a nongraded, heterogeneous, open classroom situation is the lack of support and resource materials to help the teacher. Since the teachers in the West Philadelphia Community Free School have had to design their own units over the past two years, it was thought that some of these could be used for test purposes to determine whether it is feasible to pre-design units for such a situation. Therefore, the purpose of this particular curriculum project was to design units as resource materials which would be helpful to the teacher who could reorganize the material to suit the teaching-learning situation.

PROCEDURAL OPTIONS IN DEVELOPING CURRICULUM

Procedural Options in Developing Curriculum

MORTON ALPREN, Temple University

The host of literature on curriculum and curriculum development is marked by an omission and an oversimplification of an issue that will be dealt with in this paper. The omission has been that of the options available to those who wish to develop curriculum. The oversimplification is the issue about whether teachers should or should not be curriculum developers. This paper will proceed by defining terms, examining the issue about teacher function in curriculum development, and then get on with the business of curriculum development options and applications of the options.

READING

The Usefulness of Linguistically-Based Word Generalizations

ROBERT EMANS and JEANNE McLAIN HARMS, The Ohio State University

This investigation was a replication of previous studies by Clymer, Bailey, and Emans involving the usefulness of phonic generalization. However, instead of investigating commonly taught phonic generalizations, linguistically-based word generalizations were analyzed. Graded words beyond the primary level were used as the sample. As previous studies involving commonly taught phonic generalizations found many to have limited usefulness, this study found the same to be true with linguistically-based word generalizations. However, as was found in the previous studies, some of the linguistically-based word generalizations were found to be useful.

Computer Simulation of Reading

DONALD A. LETON, University of Hawaii

A computer program (Simuread) has been written to convert English word orthography into segmented phonemes. The program accepts prespecified alphabet, punctuation and logogram input; and designates the segmental phonemes necessary for their representation in oral language. The program is an algorithm for the segmentation of graphic units within words and for the designation of phoneme chains. Numeral equivalents are used to simulate the segmental phonemes. Simuread has been developed to process primary grade level reading materials. Its application on word corpora from basic readers is illustrated. Portions of the graphic-phonic conditional association matrices are also presented.

The Language Experience Approach for Teaching Beginning Reading to Culturally Disadvantaged Pupils

POSE M. LAMB, Purdue University

The purpose of this study was to investigate the effectiveness of the language experience approach to beginning reading instruction with ten classes of "culturally disadvantaged" pupils. It was hypothesized that the achievement of pupils using the language experience approach, as measured by the California Reading Test, would be superior to that of pupils using other, more traditional approaches and that the attitudes toward reading of the language experience pupils, measured by the Primary Pupil Attitude Inventory, would be more positive. Analyses of covariance and analysis of variance revealed almost no significant differences between the two groups.

Goals and Objectives: An Analysis of Some Empirical and Conceptual Problems

GEORGE T. WREN, University of Virginia

In conducting evaluations within school systems, a primary concern is to determine whether or not objectives have been attained. This paper presents the results of the Virginia Evaluation Report on Performance Contracting in Reading, showing how standardized tests are inadequate as a measure of specific curriculum objectives. The empirical problems are used as a stepping stone for a conceptual analysis of the terms "objectives" and "goals," considering some of the normative and logical problems that arise. Is-ought components of assertions about goals and objectives are discussed. Also, the possibilities of specifying necessary and/or sufficient conditions are analyzed.

SOCIAL ASPECTS IN CURRICULUM

An Answer to a Challenge – Innovation in University Curriculum

HANSOM P. BAPTISTE, JR. and CARMELITA O. MEINDL, Indiana University, South Bend

It was hypothesized that individuals with a high personal and academic risk rating could succeed in a university program if the curriculum met the needs of these individuals. At this time 44 participants have completed the first year of an innovative training program at Indiana University–South Bend. Data reflecting success in the university program have been analyzed. It was determined for the purpose of this study that a successful participant maintained a 3.0 grade point average. The significance of this study is the success of high risk individuals in a university program training paraprofessionals as teacher aides.

Assessment of an Intervention Curriculum Unit in Intergroup Education

IRVIN DAVID GLICK and DEAN L. MEINKE, University of Toledo

Eighty-six sixth grade boys and girls, ages 10-13, from an all white, suburban, high income residential area (experimental group), and 105 sixth grade boys and girls, ages 10-13, from an all white, rural, low income residential area (control group) were administered a pre- and post-test measure (Paired Hands Test developed by Karl Zucker). The treatment was a seven step (or process) intervention curriculum unit. The findings using a two-way ANOCOVA strategy were: significant change toward increased friendliness for experimental subjects.

Attitudes Toward Increased Social, Economic and Political Participation of Women as Reported by Elementary and Secondary Students

SELMA B. GREENBERG, Hofstra University

Two objectives of this paper were: to discover pupils' perceptions of women's opportunities and abilities in comparison to those of men in the social, political and economic spheres and to determine if these perceptions are influenced by sex, grade or social class. Sixteen hundred students from 4 social classes and 4 grade levels responded to a 20 item questionnaire. Although some attitudinal differences occur across grade and social class lines the major differences are found when the data is analyzed in terms of the respondents sex. Throughout the study female students respond more positively and optimistically to questions concerning abilities and opportunities for women than do male students.

Self-Reported Perceptions: Current Status and Desired Roles in Student Autonomy

RICHARD C. KUNKEL and JAMES H. McELHINNEY, Ball State University

This study attempts to examine the degree of school-related student autonomy in secondary school pupils. The study was part of a larger curriculum evaluation in Northwestern Indiana beginning in March 1970 and ending in August 1971. Secondary students in 23 schools were surveyed by questionnaires and systemic interviews. The resulting evaluation is based upon the description of what pupils, teachers and other school personnel think is happening in schools. The level of autonomy among students surveyed varied in the different schools studied. The study would indicate there is little evidence of, yet much pupil desire for, increased pupil autonomy.

SYMPOSIA

THE ALTERNATIVE FUTURES OF CURRICULUM

LOUIS J. RUBIN, Communication Coalition for Educational Change, ORGANIZER

It is becoming increasingly evident that the school curriculum is faced with a number of alternative futures. The options are created in part by advances in learning theory, by the growing obsolescence of traditional patterns, by the changing nature of youth, by the potential of technology, and by fundamental revolutions in the social system itself.

The immediate consequence of these alternatives is that curriculum design has been thrust into a state of confusion and flux. Whereas the curriculum scholar once was both theorist and designer, inventing programs of instruction according to an orderly rationale, he now finds it necessary to interpret and evaluate new curricula which evolve not out of a tested theoretical base but out of expediency, fad, the availability of machinery, the lust for change, the desire to guarantee learning performance, the willy-nilly application of experimental psychological constructs, and other irrational or at least disorderly procedures.

Another immediate consequence is that curriculum has become a battleground for competing ideologies. There are those who advocate curricula based upon the precision and rigidity of proscribed learning modules, regulated through computers and daily diagnostics; those who advocate a form of schooling, characterized as "free", in which the child determines his own experiences; as well as those advocating education that is predominantly affective in nature, deferring to the psychotherapeutic and philosophical canons of humanistic psychology, and so on.

And, of greatest importance, the cultural revolution ongoing in America has led to new and diverse value systems, and to the inevitability of a pluralistic society which cannot help but place different and often conflicting expectations on its schools.

It is not surprising, therefore, that the future of curriculum is indeterminate and chaotic. We cannot be certain whether the comparatively carefully constructed curriculum projects of the 1950's and the early 1960's will sustain their impetus, or whether they will be overshadowed by more recent and haphazard developments. Nor can we be certain that the need for authentic options and alternatives will not lead to curriculum designs that are merely shibboleths, stale ideas camouflaged with fresh intellectual varnish.

The proposed symposium will examine these problems from different vantage points. While the arguments to be set forth by both the participants and the discussants may not be contradictory, they will at least illuminate the alternatives available and provide a platform for a general audience consideration of what may well become a decade of curricular crisis.

Benjamin Bloom, University of Chicago, will argue that we are best advised to approach curriculum development through a series of national curriculum centers. In contrast, Joseph Schwab, University of Chicago, will argue that much of the recent activity in curriculum development has evolved from a scant knowledge base, lacking rigor, logic and the systematic use of workable theory. Louis Rubin of the Communications Coalition for Educational Change, espousing a rather different conviction, will maintain that—whatever else is done—the teacher in the classroom is the only real curriculum agent. In short, the curriculum is no more or less than what the teacher chooses to do.

As discussants, Ralph Tyler of Science Research Associates, Elliott Eisner of Stanford University and John Goodlad of the University of California, Los Angeles, will comment upon these arguments, attack weaknesses, and seek to clarify the common ground. In addition, Tyler, Eisner and Goodlad will make appropriate references to the work of Bellack, Short, MacDonald and other curriculum theorists of note, as well as add insights of their own. In particular, Tyler will point out that while curricular diversity is essential, much of the so-called reform of curriculum has not provided schools with legitimate new alternatives, and that too much of the designers' attention has been preoccupied with matters that are largely trivial. Eisner will analyze curriculum development in England, relating the analysis to the points which have been raised and to common abuses of the concept of flexibility and openness. Finally, Goodlad will consider the organization of the school, administrative behavior, and public expectation in relation to all that has been said.

The closing forty-five minutes of the symposium will be devoted to discussion from the floor. It is anticipated that the presentations will be sufficiently provocative to stimulate a sequence of lively dialogues that reflect broader points of view. Thus, it should be possible to clarify some of the more important defects of contemporary curriculum activity and to at least point the way for future endeavor.

CONTENT ANALYSIS AS A TOOL IN FORMATIVE AND SUMMATIVE EVALUATION

HULDA GROBMAN, New York University, ORGANIZER

Content analysis, a procedure for systematic categorization of verbal or behavioral data, is a potentially valuable tool for curriculum evaluation. While the technique has been developed and refined in communications and social science research, at present although a wide variety of other content analysis approaches useful in evaluation are feasible, interaction analysis is the only use being widely explored. The purpose of the symposium is to identify and explore aspects of this potential as well as examine some problems faced by investigators developing or adapting analysis systems. Through joint exploration by participants, discussants and audience, it is anticipated that a clearer definition of the potential for content analysis in curriculum evaluation will emerge.

The first paper will be "Selective Survey of Content Analysis in Education, Communication and Social Science Research" by Hulda Grobman, New York University. The presentation will identify and assess some uses of content analysis in education to date and will explore some ways in which its use in communications research and social science research may be appropriate to or adapted for educational evaluation. Treatment will be in terms of the kinds of questions that may be approached through use of content analysis and some of the limitations in work previously done. Areas to be considered include: relative content emphases and cognitive level emphases; methodological orientation; implied or prescribed role of teacher and learner; learning theory implied; readability (appropriateness of vocabulary and situation in terms of discipline and target audience); affective overtones (including ideological value system, reward system, stereotypes, role models, value assumptions).

A paper on the "Use of Content Analysis in Constructing Curriculum Models" will be presented by Anthony LaDuca, Center for Urban Education. Educational objectives have been defined by Tyler as statements of intended behavioral change in the learner. Assuming that the specification of teacher behavior appropriate to the accomplishment of the curriculum objectives is also required, it follows that the curriculum defines a teaching method. Using Gage's definition of teaching method as essentially equivalent to role behavior, the formulation of teaching models based on systematic behavioral content analysis of the curriculum seems strategically appropriate.

An instrument, or analytical system, has been developed which permits analysis of curriculum materials for teacher behaviors in nine verbal and nonverbal categories. The categories include: asking open-ended and closed-ended questions; telling; verbal acceptance behaviors; knowing procedure or subject matter content; demonstrating; planning; and organizing. The instrument may be applied to a variety of curriculum materials, such as the teacher's edition of the curriculum textbook. Data derived from such analysis can be interpreted as defining the curriculum's teaching model. Thus, analysis of teacher materials of four junior high school inquiry science curriculum projects has resulted in the construction of three inquiry teaching models and the consistency between the teaching models and the respective curriculum objectives has been estimated.

Definition of the curriculum teaching model facilitates formative and summative evaluation. For example, in the formative stages the curriculum developer may seek to determine consistency between his intentions (objectives) and his written instructions to the teacher. More appropriate to a summative evaluation is the formulation of the teaching model following curriculum development, so as to provide both descriptive and comparative data concerning the curriculum.

The next paper is "Problems in Construction of Content Analysis Systems" by Arthur Lebofsky, Clarkstown, N. Y., Central School District. Content analysis in curriculum evaluation may demand singular solutions to problems of a type not encountered in other kinds of quantitative research. The presentation focuses on such problems as: definition of the parameters to be considered; selection of manifest or latent level analysis; appropriateness of the methodology to the evaluation purpose; delineation of categories appropriate to the purpose; sample selection; role of hypotheses; determination of instrument reliability through pilot study data; validation of instrument. Consideration of the selected problems is presented within the context of a study of prescribed teacher behavior.

These problems impose serious limitations on content analysis methodology. However, within these limitations, data derived from manifest content analysis introduces a new dimension to formative and summative evaluation.

The educational significance of the symposium is to direct attention to an underutilized tool for formative and summative evaluation and to identify new uses for this tool in such evaluation. Much of the evaluation activity of developmental curriculum projects in the past decade has involved classroom tryouts with gross or refined measures of student performance or of in-class behavior of teacher. Comparisons among curricula again have been based largely on limited measures of relatively short-term teacher or student outcomes. There has been relatively little systematic evaluation to examine the curriculum itself in terms of congruence with stated or implicit intent of the curriculum builders or with external models or series of objectives of persons other than the curriculum builders. While integrity of curriculum in terms of scholarly accuracy has been discussed, integrity in terms to other purposes has not. Establishing the integrity of the curriculum through content analysis should be a pre-condition to classroom testing.

J. Richard Budd of Rutgers University and William V. Mayer of Biological Sciences Curriculum Study will serve as discussants.

EDUCATIONAL RESEARCH AND SCHOOL SYSTEM INTERVENTION: THE PLACE AND STUDY OF CURRICULUM DEVELOPMENT

F. MICHAEL CONNELLY, The Ontario Institute for Studies in Education, ORGANIZER

The objectives of this symposium grow out of a concern that there appears to be very little *progressive* development in the capability to intervene in school systems. An historical perspective on curriculum development, suggests that the interventions that do occur amount to either taking up new locations on the same landscape or to reiterating old locations. Part of the reason for these characteristics is that there is very little research on curriculum development—e.g., on its assumptions, processes, and interpretations by users. Consequently, little has been learned about development from the spate of projects in recent years. Still another reason is the existing separations in functional relations between educational organizations and between educational personnel with different roles. These separations reflect inadequate operating conceptions of the relations of research, development and school curriculum practices.

Accordingly, the major objective of this symposium is to generate ideas on the study and place of curriculum development with respect to research and theory on the one hand, and school curriculum practices on the other. This will be done by bringing together people of different perspectives—Connelly, who views development from the perspective of choices and alternatives available to local teacher users; Walker, from the perspective of the committee deliberations of developers on projects external to school systems; Atkin, from an international perspective on the values and assumptions in development; and Chase, from an international perspective on educational policy making, implementation and evaluation.

J. Myron Atkin of the University of Illinois, Urbana-Champaign, will present: "Value Questions in Curriculum Development: An International Perspective". This presentation is concerned with the value assumptions underlying curriculum development. A comparison of selected industrialized countries will illustrate similarities and differences in the purposes and modes of development and will serve as a basis for investigating broad differences in educational values which are associated with development in differing countries. Major decision points common to curriculum development in various countries will be identified and the values associated with the available alternatives at each decision point will be described. In keeping with one of the overall themes of this symposium, this presentation will attempt to evaluate the extent to which curriculum development contributes to the modification of practice in the various countries. Furthermore, it will be argued that certain sets of values, identified in the alternatives available during the process of development, contribute to more effective working relationships between researchers, developers and practitioners than do other sets of values.

Francis S. Chase of the Southwest Educational Development Laboratory will discuss the topic: "Research and Development: Current Practices and the Evolution of A Systems Conception for the Future". This presentation will evaluate the reports and positions of other symposium participants in terms of their contribution to workable relations among researchers, developers and practitioners and in terms of their capacity to generate incremental and reconstructive changes in curriculum. A conception of curriculum treated as a system for monitoring learning environments will be advanced. This view involves alternative strategies and treatments joined in cycles by need assessment and feedback from learners. Major elements in learning environments need to be identified in the process. This view necessitates the evolution of research and development practices including: 1) the development of new relations among educational personnel and among educational organizations, 2) the development of new roles and their associated skills for educational personnel, and 3) the development of new institutions. All of these developments are now visual in some form. An analysis of the factors likely to be instrumental in aiding and inhibiting the evolution of research and development practices will be presented.

F. Michael Connelly of The Ontario Institute for Studies in Education will present the paper "Curriculum Development as a Form of Practical Enquiry: The Teacher as a Choice Maker". This presentation will argue that one of the major factors preventing progressive change in school curriculum practices is the periodic swing in the locus of curriculum development, i.e., locally by practitioners and externally by subject experts, and others, outside the school system. These swings reflect an inadequate operating conception between theory and practice. A view of curriculum development seen as a form of practical enquiry will be elaborated. This view treats research and development as interdependent activities and establishes organic connections between research and school curriculum practices. From the perspective of the classroom teacher, this view suggests that the teacher not only understand the underlying choice points, but, in fact, make choices among alternatives for the particular curriculum situation in question. The rationale and preliminary research findings in a study of teacher deliberation aimed at making practical curriculum choices will be presented.

Finally, Decker F. Walker of Stanford University will present his paper: "The Study of Curriculum Development Projects". The presenter's research on the process of curriculum development in projects will be reviewed briefly as an example of current research in this area. The position will be taken that this line of research needs to be developed further, extended to previously neglected aspects of the process (such as materials construction and getting information on the effectiveness of materials in classroom use), and deepened to give more attention to the fundamental elements—logical, socio-political, and educational—of the curriculum development process. Methods will be suggested for making use of the insights gained in this research to improve classroom practice via the improvement of curriculum development procedures.

EVALUATION EFFORTS IN LABORATORY AND RESEARCH DEVELOPMENT CENTERS: SOME EMERGING ISSUES

WILLIAM J. WRIGHT, Central Midwestern Regional Educational Laboratory, ORGANIZER

One of the most salient issues in contemporary curriculum development is the manner in which the sponsoring institution evaluates its own products. A variety of approaches are available and in use. In this symposium we propose to present several different evaluation strategies or models now in use at a laboratory or research and development center. The major thrust of the symposium will be an examination of each technique in terms of the audiences it serves and its heuristic value for other curriculum development efforts. Some of the issues to be considered will be the role of the evaluation staff with respect to the curriculum development staff, the function of internal evaluators with respect to product worth judgment or inferences, the need for experiments or quasi-experiments during various product stages, and the responsibility of the sponsoring institution to potential consumers.

Robert J. Hess and William J. Wright, Central Midwestern Regional Educational Laboratory, will discuss "Evaluation Strategies as a Function of Product Development Stages." The point of view of this paper is that as products are cycled through developmental stages, the nature of the information required for an adequate evaluation changes as does the preeminent audience of any evaluation report. The authors contend that these changes are reasonably systematic and that by utilizing the notion of foreshadowing it becomes possible to structure evaluation such that the distinction between formative and summative evaluation becomes a question of purposiveness and not one of exactness.

Ralph Hanson of the Southwest Regional Laboratory for Educational Research and Development will discuss "Quality Assurance Procedures for Criterion Referenced Instructional Programs." The author will discuss the procedures used by the Southwest Regional Laboratory after program installation. They have found that an interactive process among laboratory and school personnel for the collection of information, primarily unit criterion and end of term data, has proven useful for both formative and summative evaluation efforts.

Thomas J. Johnson, National Program for Early Childhood Education, will discuss "Evaluation in the Context of Product and Model Development in Laboratory and Research and Development Centers." An evaluation model designed to meet the unique responsibilities of government sponsored research and technology development organizations will be presented. The model deals explicitly with the issues of functional organization, policy review, and decision making processes as well as with more methodological issues related to data gathering modes, product characteristics, performance outcomes and their interactions.

Louis M. Smith of the Central Midwestern Regional Educational Laboratory will present the paper "The Use of Observational Strategies for the Development of a Summative Evaluation Model." The author is currently engaged in the observation of an extended pilot trial of the CEMREL Aesthetic Education Program. One consequence of these efforts is to be a plan for the summative evaluation of that program which takes into account situational and locale contingencies. His contention is that participant observation will promote the discrimination of sub-projects and the priorities among these sub-projects such that subsequent trials can be more carefully designed and controlled to attend to the critical issues and concerns.

Finally, W. Donald Hubbard, Thomas J. Fischbach, and Mary R. Quilling of the Wisconsin Research and Development Center for Cognitive Learning will present "Evaluation as an Interactive Force Between Developer and Consumer." A design strategy is discussed that proposes a systematic longitudinal interaction between the evaluation and development processes of an educational program. The usual sequence of pilot, small scale and large scale field tests is questioned. Included in this strategy are the formation of a broad range of terminal objectives, uses of control groups, variations in the mode of analysis and documentation of the marketing prospects of the product.

Ralph W. Tyler, Center for Advanced Study in the Behavioral Sciences, Arich Lewy, Israeli Ministry of Educational Culture, and Michael Scriven, University of California, Berkeley, will discuss the presentations.

The importance of the symposium rests in the intended exchange of information, and in the interaction of the various perspectives on curriculum evaluation in the specific context of a laboratory or research and development center. The discussants have been selected to represent diverse expertise in the field of evaluation so as to insure varied post-presentation discussion. The major consequence of the symposium hopefully will be the initiation of a continuing dialogue among those engaged in similar enterprises.

OPERATIONALIZING AND IMPLEMENTING OPEN EDUCATION

HERBERT J. WALBERG, University of Illinois, Chicago Circle, ORGANIZER

In response to the growing interest in what has been termed Open Education (also known as British Infant Education, the Integrated Day, and the Leicestershire Plan), the participants have begun a variety of serious investigations of its distinctive characteristics and implementation.

Open Education (henceforth, OE) is difficult to characterize in the manner that behavioral scientists are accustomed to operationalizing concepts, for the approach is founded upon contingency and uniqueness; each student, teacher, and event is *sui generis.* The feelings and behavior of the Open teacher cannot be easily categorized because her guiding principle is to respond as sensitively and reflectively as possible to the unique child at the precise moments in the temporal stream and situational *Gestalt* of her interaction with him. Also implicit in the approach is a view of the child, especially in the primary grades, as a significant decision-maker in determining the direction, scope, means, and pace of his education. Since there has been little research on OE, it seems fitting that a variety of methods of research, as exemplified in this Symposium, might be brought to bear on this challenging innovation.

Judith T. Evan's (of Harvard University) paper "An Activity Analysis of British and American Open Classrooms" is a report on the range of activities and behaviors exhibited in open and traditional classrooms in the United States and Great Britain. From semi-structured classroom observation schedules, different profiles were developed and compared for the comparison groups stratified by social class. Providing a behaviorally-based definition of OE should increase our understanding of this approach to childhood education.

Herbert J. Walberg and Susan C. Thomas' (of the University of Illinois, Chicago Circle and Boston Public Schools, respectively) paper, "Validating Eight Dimensions of Open Education", focuses on dimensions of OE derived from anecdotal literature and operationalized with classroom rating scales and a teacher questionnaire. Comparative data on OE and traditional classes, New York, London, and other cities reveals the consistency of the theory of the concept and its classroom practice.

Richard Hirabayashi's (University of Illinois, Urbana-Champaign) paper, "An Ethnographic Analysis of Open Education", is an anthropological approach to the cultural and social context of the subjective values of teachers and students in OE classrooms. The micro-culture of the classroom is described in terms of specific observational categories which distinguish open and traditional classes.

Steve Wlodarczyk's (University of Illinois, Urbana-Champaign) paper, "Analyzing Values in Open Education", exemplifies a philosophical approach to value analysis and seeks to identify the qualities of OE that are possibly antagonistic to traditional cultural values. Data from simulated events, rating scales, and critical incidents document the value and role conflicts emerging when implementing OE.

Nettie R. Bartel's (Temple University) paper, "Individual Differences in Open Education", explores how OE is being used in the Philadelphia Public Schools to reduce the labeling of deviant ("disturbed" or "under-achieving") children. Traditional and innovative teacher observation systems are used to document this provisioning for individual differences in open and traditional classes.

Russel Cort's (of the General Learning Corporation) paper, "Classroom Support Strategies in Open Education," distinguishes the participatory problem-solving support model from the program installation model in implementing OE in the Washington (D. C.) Public Schools. Data on student ratings of classrooms, self-esteem, and reading achievement allow him to portray the contrasting implementation strategies.

Bernard Spodek's and Theodore Manolake's (University of Illinois, Urbana-Champaign) paper, "In Class Teacher Training for Open Education," describes the distinctive training strategies required to develop behavioral repertories of teachers beginning use of OE methods. The focus is on the role fo the OE advisor and his relationship to the classroom teacher in effecting constructive educational change.

Thus, the series of papers, moves progressively from behavioral analysis, through cultural and value description and provisioning for individual differences, to innovative support and implementation strategies. Since a number of educators are implementing OE and research groups are evaluating the concept, the variety of perspectives presented here will be of interest to those interested in reforming the schools in the direction of Open Education.

OPPRESSION AND SCHOOLING

JOHN S. MANN, University of New Mexico, ORGANIZER

The title itself was problematic. It could have been *Oppression in Schools,* which would have suggested that "oppression" sometimes happens in schools more or less unintentionally and that appropriate reform measures should be taken to minimize occasions of oppression. Or, it could have been *The Oppression of Schooling,* which would have suggested that Schooling per se is systematically oppressive. Or, it could have been *Schooling as an Instrument of Oppression,* which would have suggested the view that Schooling is an instrumental subsystem of an oppressive society. The three participants have each argued, at one time or another, on behalf of each of these three positions. They have argued with each other, with their students and colleagues, and with themselves. Their progress in these arguments is reflected in the choice of a symposium title which does not commit them specifically to any one of the three views. They all are very sure that in some fundamental ways schools do oppress.

The purpose of the symposium is threefold:

1. While the participants are uncertain about the forms, motives, and structures of oppression, they are very firmly convinced that regardless of its precise nature it is true that a *primary* (if unintended) consequence of most "scientific" research in education is to legitimize oppressive structures and practices. Thus they wish to engage scholars who are more accepting of "scientific" education research in consideration of the nature of oppression in the hope that they may go on to consider their own research effects in the context of its contribution to oppressive practices.
2. Second, the participants wish to have their own thinking subject to the scrutiny of other educators who are interested in the notion of oppression but who have not yet become actively engaged in inquiry into oppression. The scrutiny is expected to be useful to the participants in their own continuing work, and hopefully initial engagement in the topic will lead other educators to undertake their own inquiries.
3. Finally, the participants hope to stir up some trouble in Division B, to get curriculum people to fight with each other publicly, forcefully, and intelligently. There is a tendency in the research community to conceal fundamental moral schisms behind agreement as to methodology, and to constrain public debate to details of findings and to technical deviations in method. There are undoubtedly contexts in which this pattern is not only acceptable but highly desirable. The contemporary curriculum research person who consumes a large proportion of those public resources which are allocated to education, and who serves an enormous turgid bureaucracy that is a principle factor in our society's provision for maturation of the young, does not provide such a context. Our nation is in a time of crisis, and there is a very rapidly expanding and broadly consumed semi-popular literature which argues that our schools are pivotal in this crisis. At such a time, the participants believe, it is appropriate for knowledgeable persons who have some influence upon our schools to address a portion of their energies to the task of questioning the fundamentals upon which their everyday enterprises might be allowed quietly to rest in quieter times. The notion of "oppression" provides one approach to such questioning. It is a matter of shaking us out of our everydayness.

"Oppression" is a catchy word, dramatic and probably over-used. The participants would like to be understood to have three fairly precise meanings of the term in mind. The three meanings might be thought of as convergent or as divergent, depending upon what other assumptions one makes about human nature and society. The common dictionary meanings include: "unjustly severe burden," "unreasonable imposition of authority," "burden of the spirit," etc.

First meaning: Schools burden the mind of the child with data and operations that constitute a severe burden to the development of healthy and creative intellect. Of the many models available to illuminate this meaning, Lawrence Kubie's discussion of the effect of common schooling practices upon the development of a sound relationship between conscious and pre-conscious thought processes is perhaps the most useful.

Second meaning: Schools burden the spirit of the child, depriving him of, and damaging his capacity for the richest sorts of human experience. The most useful models here are those provided by contemporary humanist psychology. The works especially of Carl Rogers, Rollo May, and Herbert Maslow illustrate this sort of oppression.

Third meaning: Most of the world's peoples suffer the oppression of unjust authority buttressed by unjust distribution of goods, privileges, and opportunity. Since school is one of the chief means by which societies perpetuate their institutional structures, it is reasonable to suggest that schools may contribute rather directly to these forms of oppression. Major portions of Marxist class analysis, the social criticism of Ivan Illich, and the pedogogical humanism of Paulo Freire illuminate this meaning of oppression well.

The Participants of this symposium are Michael Apple, University of Wisconsin; Richard Kunkel, Ball State University; John S. Mann, University of New Mexico; and William Pilder, Indiana University. Mr. Apple, Mr. Kunkel, and Mr. Pilder will prepare papers which we hope to have available before the symposium. Mr. Mann will respond to the three papers and raise questions about them, and develop discussion among the participants and the people in attendance at the symposium. We would like, by the end of the symposium, to have developed some topics and strategies for further inquiry.

PERSPECTIVES ON MANAGEMENT SYSTEMS PROCEDURES IN EDUCATION

ALBERT H. YEE, University of Wisconsin, Madison, ORGANIZER

Schools have not lacked for contentious theories and research approaches to affect their organization and operations. Yet despite such variation, certain frames of references have dominated curriculum development and evaluation. Perhaps the best established practices stem from the scientific-economic-technological paradigm, which educators appear to accept without much challenge. However, lack of debate does not denote real understanding of why such practices should prevail. What typical educators do understand about empirical approaches does seem acceptable and compatible with the modern age in which we live, and they readily acquiesce to the expertise and judgment of researchers. The problem, therefore, becomes one of perspective and understanding what basic assumptions underlie curricular policies and programs.

Becoming more knowledgeable in empirical techniques is not what is needed to overcome the problem we identify. Techniques in and of themselves do not provide the problems we wish to discuss, for their integrity rests as assumptions and proofs independent of application. Rather, it is *how* they are used that makes the crucial difference.

Standardized norms, statistical analyses, experimental designs, behavioral objectives, evaluation, etc., have become routinized in American education. To many, such aspects of the scientific movement in education make it seem heretical to probe their prominent status and function. However, we would argue that few researchers, not to mention the typical educator, can provide much of a rationale for their use that is intellectually comprehensible in terms of the total and significant purposes of schools.

Educational researchers must be able to defend and support their conceptual approaches if they are confronted with questions asking *why* as well as *how* and preferably in that order. The latest developments have been management systems approaches and performance contracting. Growing quite naturally from technical procedures, they have been organized into a structure that strongly appeals to school and governmental leaders, e.g., ES '70 program, and epitomize how the scientific-economic-technological paradigm affects schooling.

This symposium, therefore, will examine the meaning and impact of management systems approaches upon curriculum and instruction and try to provide wider perspective concerning their educational efficacy and relevance.

The first paper will be "Objectives-Based Management Strategies for Large Educational Systems" by W. James Popham of the University of California, Los Angeles. Among the alternatives currently being considered by those educational planners attempting to devise systematic management schemes for large scale educational systems are strategies which are focused on statements of instructional objectives. In several states, e.g., Florida and California, planning is under way in the state legislature to devise educational objectives. In large school systems, e.g., Los Angeles, comparable mechanisms are under consideration.

This presentation will analyze the critical ingredients in using objectives-based systems for (1) *goal determination,* that is, decisions regarding the direction of the educational enterprise, (2) *progress monitoring,* that is, the formative evaluation of the system's en route success in attaining its goals, and (3) *output appraisal,* that is, the summative evaluation of the system's effectiveness. Several empirical studies, conducted by UCLA and the Instructional Objectives Exchange, will be reported insofar as they bear on these three phases of large scale educational management.

The second paper, "Adequacy of Systems Management Procedures in Education and Alternatives," will be presented by Michael W. Apple of the University of Wisconsin, Madison. Much of the recent thought in curriculum design and teacher education has drawn upon systems theory and analysis. However, little thought has been given to a number of rather important questions such as the adequacy of systems approaches itself in dealing with complex human phenomena. This paper will analyze the theoretical limitations of systems approaches in education as practiced today. For instance, a good deal of the use of such approaches in educational thought has been an inadequate representation and, often, a distortion of systems models. Furthermore, the utility of a systems approach, itself, will be examined in depth.

Among the questions raised about the use of systems management procedures in education will be the following: (1) Are there logical difficulties in systems analysis which, when applied to educational issues, lead to problematic consequences? (2) Can systems management techniques adequately treat the moral dimension so closely intertwined with educational practice and decision-making? (3) Are there issues which must be dealt with more cogently than has heretofore been the case concerning the borrowing by educators of models and modes of analysis from disparate fields and applying them in a relatively unsophisticated way to another somehow different area?

The last paper, "Performance Contracting: Management Systems' Undoing or Ultimate Approach to Educational Revolution?" will be presented by Albert H. Yee of the University of Wisconsin, Madison. Conducted in a diverse and complex society or in a relatively stable and simple setting, education dictates purpose, organization, and teaching-learning processes. Curricular differences can be largely analyzed by the decisions and assumptions underlying them to decide what education is to accomplish and why, how schools and classes will be organized to achieve the desired effects, and the nature of actual teaching and learning to influence students. Therefore, schools by definition are operational systems. With the scientific-economic-technological frame of reference so predominant today, management systemization has captivated much of the educational leadership and its ultimate manifestation has become known as accountability and performance contracting. The concepts require careful scrutiny, for they seem to epitomize the fundamental weaknesses and strengths of the scientific-technological managerial approach to education.

This paper will outline performance contracting's purposes and procedures, indicate its roots and progress, and suggest its possible values and dangers. It will be argued that strict commitment to performance contracting falsely assumes that teachers can only be functionaries instead of professional leaders and that quantifiable behavior is most important educationally. The priority order in school organization, classroom processes and purpose must be reversed, not to negate proper system and order but to maximize instructional resources and alternatives for the social interaction of teachers and learners.

Louis Fischer, University of Massachusetts, will serve as discussant for these papers.

RESEARCH, SYSTEMS DESIGN AND THE FUTURE OF UNIVERSITY COURSE EVALUATION

G. H. ROID, McGill University, ORGANIZER

Most universities and colleges in North America employ course and instructor rating systems. These typically involve a questionnaire given to students at the end of courses, the results of which are tabulated, summarized and sometimes published or distributed by student groups or Test Bureaus.

Despite the current widespread use of course evaluation in colleges and universities, problems with the validity and usefulness of questionnaires and rating systems still remain.

In terms of validity, questions still remain concerning the dimensions of student ratings which are related to actual student learning. Most studies in this area have investigated the relationship between student ratings and final examination grades and have revealed moderate, sometimes inconsistent results.

In terms of usefulness, consultants who work with users of ratings (e.g., an instructor trying to improve his course or a dean evaluating his department's teaching) have found that questionnaire results are not always easily translated into meaningful course improvement or behavior change in teachers. This may be due to a lack of attention to the systems aspects of course evaluation. Much of past research has focused on the psychometric properties (reliability, validity, norms, factor structure, etc.) of evaluation questionnaires. Recent developments in evaluation theory would suggest that the questionnaire is only part of an evaluation process or system which includes initial specification of objectives and mechanisms for using evaluation data as feedback.

These problems imply a need for a concerted effort to change the direction and emphasis of planning and research on course evaluation. This symposium will serve as a forum for the presentation of new data, discussion, and suggestions for the future direction of work on the problems of effective course evaluation.

Individual presentations will be made by investigators from several of the major course evaluation programs (both research and implementation) in universities.

Wilbert J. McKeachie, University of Michigan, will discuss "Student Evaluation Keyed to Function." Ongoing research in course and instructor evaluation is described in which multivariate discriminant analysis is used to identify evaluation questionnaire items that differentiate between teachers. Such items should hold information which is useful and not typically given by non-differentiating items. Studies in progress on the usefulness of differentiating items as feedback to instructors are described.

W. G. Warrington, Michigan State University, will discuss "Perspectives from the MSU Instructional Rating System." Empirical development of a four-part instructional rating system is reported and problems in its operation are reviewed. The system involves a rating form, computer tabulation program, user's manual, and consultative sessions aimed at helping the instructor evaluate and improve his teaching. Normative data on over 6,000 administrations involving over 225,000 respondents have been collected.

Elaine R. Parent and Keith Wharton, University of Minnesota, will present the paper, "Evaluation of Instruction: Communications for Improvement *Now*." The primary purpose of the evaluation of instruction is to improve instruction. The focus of the evaluation program should be on the individual teacher and his students within a given period of time (quarter or semester). The program should contribute to an open environment in which those students who wish to do so (many do not) have the opportunity to communicate their evaluations, suggestions and recommendations to the instructor at any time during the course. Evaluation should be low-key and informal, part of the "routine" of the class. Examples from the University of Minnesota are presented.

Charles Van Horn, Purdue University, will present the paper, "Student Ratings of Teachers: Objectives, Objections and Implications." Objectives set and assumptions made in development of the Purdue Rating Scale for College Teachers, the implications they yield, developmental steps taken in recognition of these, and unresolved questions remaining are discussed. Current status of scale validity is reported. The implications of widespread use of student ratings, some important objections raised, and some proposed inquiries are summarized.

G. H. Roid, McGill University, will discuss, "Systems Design for Course Evaluation." Course evaluation should be viewed as a system of collecting information useful in decision making on the part of students, instructors and university planners. As such a questionnaire may be only a small part of a total system. Five steps in the evaluation of preconditions, process, and products of a course are defined as: (a) stating values, expectations and objectives from viewpoints of students, teachers, and planners, (b) choosing types of information and measurement methods, (c) collecting information at appropriate times, (d) interpretation of results, and (e) using data for change. The details and informal studies of these steps in an ongoing university course evaluation project are described. Suggestions for needed research are given.

Richard Smock of the University of Illinois, Urbana-Champaign, and Charles Pascal, McGill University, will discuss the papers.

THE RIGHT TO CHOOSE: VIEWPOINTS ON STUDENT CHOICE WITHIN COLLEGE COURSES

JOY J. ROGERS, Purdue University, Calumet, ORGANIZER

The objectives of this symposium include the following. Attendees will be able to summarize the findings of existing research on student choice. Attendees will be able to discriminate between studies of student choice as a variable of input, output, or process. Attendees will be able to identify major points of difference or conflict in the findings of studies on student choice. Attendees will be able to avoid some methodological pitfalls idiosyncratic to research on student choice. Attendees will identify student choice as an area in which further research is likely to be productive.

The individual presentations are as follows.

George L. Geis, Centre for Learning and Development, McGill University, will present, "Student Choice Viewed Operationally." This paper constructs an operational definition of student choice, casts current studies on choice into a consistent framework of research, points to a variety of suggestive studies and demonstrations, and provides a taxonomy of areas or variables which ought to be explored further. The purpose of this paper is at once to delimit "choice" by defining it rigorously and to expand research vistas by pointing to areas that legitimately fit the definition, but which remain unexplored.

Charles E. Pascal, Centre for Learning and Development, McGill University will present, "Individual Differences and Student Choice of Instructional Options." This study identifies several differences related to students' choice of three options: lecture, lecture with discussion, and independent study. Students preferring each option differ on dimensions such as flexibility, autonomy, preference for abstract thinking, and several variables dealing with academic and personal experience. Other research dealing with individual differences and student behavior are discussed and recommendations for practical application to the classroom are presented.

Wayne K. Davis, Center for Research on Learning and Teaching, The University of Michigan, will present, "The Effects of Student Selection of Learning Outcomes on Achievement and Attitude Measures." In this study, the effects of allowing student choice of learning outcomes on achievement and attitude measures were examined. The information sources preferred by the students in order to make these decisions were also studied. The position of this investigator is that independent study is not truly individualized unless the outcomes of the learning experiences are designed to meet the individual needs of the student. It is further argued that choice should not be a one time occurrence which commits the student to a course of action for an entire semester. Based on the findings of this study, it appears that students should be assigned instructor determined objectives and be allowed to determine their own means of achieving these objectives.

Barbara J. Horn, Bureau of Hospital Administration, The University of Michigan, will present, "Course and Personality Correlates of Selection of Independent Study Option." The purpose of this study was to offer students two options in method for a course in library science and to explore the effects of choice on achievement, course satisfaction, and selected personality correlates. The subjects for this study were 120 graduate students enrolled in a course titled, General Reference Materials. Prior to the beginning of the course, students were offered the option of taking the course in the conventional manner or as an independent study course. Various personality measures were found to affect success in and satisfaction with the option that was chosen. However, some of these findings are in marked disagreement with other studies relating to student choice of independent study.

David D. Starks, Center for Research on Learning and Teaching, The University of Michigan, will present, "A Menu of Objectives in a Large Introductory Course." This presentation assumes that student choice is of value in instruction and describes the design of a large (1,000 students) course that permits each student to select those experiences and objectives he wishes to use in designing a personal course. In addition, the presentation will give attention to the numerous management and communication problems associated with the operation of the course.

Joy J. Rogers, Purdue University, Calumet Campus, will present, "Instructional Options in a Psychology Course." This study is an investigation of students actual preferences from among an array of instructional methods. Findings indicate that students do display clear and consistent choices. Further, it is reported that students' actual choices are not isomorphic with their stated preferences on a questionnaire. Caution in instructors' reliance on "course evaluation" data is, therefore, advised. Implications of student choice for the design of instruction are suggested.

Students are increasingly demanding greater control of all aspects of their education. Many renowned educators have spoken in support of this movement feeling, perhaps intuitively, that students can or should have this opportunity. Few, however, have made any systematic attempt to evaluate the effects of giving students choices. Student choice is unquestionably a difficult area for research. Since choices do not lend themselves to some of the more familiar techniques of experimental design and data analysis, researchers may have avoided the area in favor of more easily managed studies. The time for the systematic study of student choice, however, is late. If such investigations do not soon begin, student choice may become nothing more than another of the hastily adopted and promptly abandoned fads with which the history of education abounds.

DIVISION C: INSTRUCTION AND LEARNING

PAPER SESSIONS

ANXIETY AND PERFORMANCE

Effects of Anxiety and Item Difficulty Sequencing on Mathematics Aptitude Test Performance and Post Test Anxiety

NELSON J. TOWLE and PAUL F. MERRILL, Florida State University

Effects of item difficulty sequencing on performance and on post state anxiety were investigated using a timed mathematics aptitude test. The *Ss* were randomly assigned to a random, easy-to-hard, or hard-to-easy item difficulty sequence group. The hard-to-easy sequence group performance was significantly lower than either the random or easy-to-hard sequence groups. Though not statistically different, (1) the mathematics aptitude test scores of four achievement anxiety types grouped using the Achievement Anxiety Test, and (2) levels of state anxiety provoked by the three difficulty sequences were in the predicted direction.

Effects of Anxiety on Quantity of Examination Preparation.

ROY P. MARTIN and JOEL MEYERS, Temple University

This investigation focuses on intensive study prior to an examination ("cramming") and the effects of anxiety on the quantity of this preparation. One hundred female undergraduates were asked to record their anxiety and the amount of time studied on each of five days prior to a final examination. The quantity of study had a zero order correlation with performance on the examination, whereas quantity of study had a significant ($p < .01$) positive correlation with anxiety. It was concluded that last minute massive study may be an attempt to reduce anxiety, but it has no effect on test performance.

An Investigation of Cognitive Abilities, State Anxiety, and Performance in a CAI Task under Conditions of no Feedback, Feedback, and Learner Control

JOE B. HANSEN, University of Texas, Austin

Ninety-eight undergraduate education majors received a battery of ability tests, measuring general reasoning (R), associative memory (Ma), and trait anxiety (A-trait) and were randomly assigned to 3 groups—no feedback (NF), feedback (FB), and learner control (LC)—for a CAI course on Xenograde systems. Four A-state measures were taken: (a) prior to the course, (b) following the administration of stress instructions, (c) at the mid-point, and (d) at the end. LC *Ss* decreased more in A-state than FB. NF remained high throughout the task. High A-state *Ss* made more errors under FB than NF. FB facilitated performance for high R *Ss* but impaired performance for low R *Ss*.

Effects of Anxiety on Concept Learning

JOEL MEYERS and ROY P. MARTIN, Temple University

This study investigated the interactive relationships between state anxiety and concept learning performance. State anxiety was assessed five times during the performance of an extradimensional shift concept learning task which was administered under either high or low ego-involving instructions. State anxiety had significant debilitating effects on performance ($p < .01$; $p < .03$) whereas trait anxiety did not. Moreover, task conditions affected anxiety such that high ego-involvement produced a significant increase in anxiety. Also, poor task performance was associated with high anxiety ($r = .49$). It was concluded that these data support Spielberger's state-trait interpretation of anxiety.

Correlates of Classroom Social Climate with Student Achievement

GARY J. ANDERSON, Atlantic Institute of Education

With a sample of 64 secondary school classes, the predictive validity of a set of 15 learning environment scales was tested in eight subject areas: physics, chemistry, biology, geography, mathematics, English literature, history and French. Regression analyses showed the incremental validity of the scales administered at mid-year to account for end-of-year achievement variance in class means beyond that accounted for by IQ. The results were compared for males and females, though the environment scale correlations with achievement were constant across class mean IQ levels and nearly constant across subject areas, several differences by sex were uncovered and related to the results of earlier studies.

AROUSAL FACTORS IN LEARNING

Cues Associated with Recognition of Aural Stimuli in the Primary Grades

JANET B. KUENNE and JOANNA P. WILLIAMS, University of Pennsylvania

How do children "recognize" words aurally? Using a matching technique, subjects chose, from a tape-recorded array, the CVC trigram that most resembled the stimulus item. Each choice represented one particular error in recognition, i.e., matching on the basis of single consonant phonemes, VC and CV combinations, and the reversal of the CVC stimulus. Developmental trends in patterns of choice from kindergarten through first to second grade, differences between aural and visual word recognition, and implications for instruction will be discussed.

The Effect of Dissonance and Arousal on Assignment Performance as it Relates to Student Expectancy and Teacher Support Characteristics

RAYMOND JOHN WLODKOWSKI, University of Wisconsin, Milwaukee

A field experiment was conducted with 230 fifth and sixth grade male subjects to examine the relationship of two sets of variables as they affect performance on an arithmetic assignment. The first set of variables was the subjects' expectancy (positive or negative). The second set of variables was the dissonant or consonant expectancy of the experimenter regarding the subjects' performance. A one-way analysis of variance for the comparison of mean gain scores was performed. The dissonant experimental groups did not significantly improve. Comparison of independent proportions was significant ($p < .05$) indicating that student level of arousal and task complexity affect achievement.

Arousal and Cognitive Style

JOSEPH A. SCOTT, Chico State College; FRANK H. FARLEY, Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin

The effect of arousal manipulations on a measure of cognitive style was investigated in three experiments. On the basis of arousal, attention, and cue utilization theory it was predicted that increased arousal would render a *S*'s performance increasingly analytic as opposed to global, field dependent as opposed to field independent. Auditory noise was used to manipulate arousal, with two intensity levels and a no-noise control. Cognitive style was measured by a Hidden Figures task.

No consistent effect of arousal on cognitive style scores was obtained. Discussion considered possible deficiencies in the arousal manipulation, and the stability of individual differences in cognitive style.

The Drool Tool: A Brief, Reliable Measure of Individual Differences in Arousal

FRANK H. FARLEY, Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin

The usefulness of arousal analyses of learning and memory, emphasizing the promise of individual difference studies, was discussed. A brief, easily administered non-verbal measure of individual differences in arousal—salivary response—was described. The relationship of this measure to retention in verbal learning paradigms was outlined. Studies from the author's laboratory were summarized concerning the measure's retest reliability, inter-judge or inter-tester reliability, and construct validity. The 24-hour stability estimate was .78 ($p < .01$), inter-judge reliability estimates ranged from .994 to .999 ($p < .01$), and the correlation with an independent arousal measure, the two-flash threshold, was -.57 ($p < .01$).

The Electroencephalotopographic Correlates of Learning

ROBERT L. EVERETT, University of Houston; JOHN W. OSBORNE, University of Alberta; WALLACE ANDERSON, University of Houston

An experiment to evaluate the electroencephalographic correlates of free-learning tasks is described. Data was taken on a twenty channel topographic encephalograph, and initial analysis done by optical resolution of the frequency spectrum of the individual records, and the aggregate pattern. Correlation between electroencephalographic arousal states and free-learning task scores is observed for certain classes of subjects. Ability of the subject for continued concentration is evaluated by noting at which stage onset of EEG signs of fatigue are observed. There is a good possibility of an independent verification of the Shear effect, a synchronous, functionally located, learning correlated encephalographic signal.

BEHAVIORAL OBJECTIVES

The Effect of Presenting Instructional Objectives Prior to Reading

R. KAPLAN and E. Z. ROTHKOPF, Bell Telephone Laboratories

This study examined the effects of four characteristics of instructional objectives presented to the student prior to reading, upon intentional and incidental learning. The most salient result was produced by providing instructional objectives to *S* prior to the text. The main findings were that (a) density increases (proportion of intentional to total sentences) resulted in a reduction of intentional learning but did not affect incidental learning; and (b) specifically stated objectives produced more intentional learning than general objectives. Incidental learning was influenced by density and specificity of directions. This suggests that presentation of objectives will not interfere with incidental learning.

Effects of the Use of Behavioral Objectives and Criterion Evaluation Upon the Classroom Progress of Adolescents

A. BERT WEBB, Marshall University; WILLIAM H. CORMIER, University of Tennessee

The purpose of this investigation was to assess the effects of behavioral objectives and criterion evaluation upon the classroom progress of adolescents. Two eighth grade teachers participated, and 22 students were the subjects. Four observers and one grader recorded data daily. The teachers were trained to write behavioral objectives and to employ criterion evaluation during treatment conditions. Analyses of variance showed significant differences in classroom behavior and in achievement. No significant difference was found in subject attitudes. It was concluded that the use of behavioral objectives and criterion evaluation had a positive effect on the classroom progress of adolescents.

The Effects of the Placement of Objectives Within an Instructional Period and a Precriterion Test on the Acquisition of a Cognitive Task

STEPHEN L. YELON and WILLIAM H. SCHMIDT, Michigan State University

An experimental study was conducted to determine the relationship between the presentation of behavioral objectives given to the learner: 1) at the beginning of the instructional period, 2) in the middle of the instructional period, or 3) in the middle of the instructional period but in the form of a precriterion test and the acquisition of a cognitive task. The experimental conditions were based on a factorial combination of the aforementioned three variables resulting in a 2^3 design with eight treatment combinations. A multivariate analysis of covariance was employed to analyze the results. A significant three-way interaction between the variables was found.

The Effects of Systematically Applying Instructional Objectives and Criterion Evaluation on the Classroom Behavior of Secondary Level Students

JACK H. McEWEN and WILLIAM H. CORMIER, The University of Tennessee; THOMAS M. SHERMAN, Virginia Polytechnic Institute and State University

Instructional objectives and criterion evaluation were systematically applied to secondary level algebra classes. The effects on classroom behavior, test-scores, homework problems solved correctly, and the number of pages completed in the textbook were assessed utilizing a within class-reversal design. Observers and graders were reliably trained. The results demonstrated that instructional objectives and criterion evaluation were significant for all dependent measures. The findings emphasize the importance of communicating learning goals to students and providing the opportunity for students to remedy their deficiencies.

The Effects of the Availability of Objectives on Performance in a Computer-Managed Graduate Course

PAUL F. MERRILL and NELSON J. TOWLE, Florida State University

The effects of presenting objectives to students in a graduate computer-managed course were investigated. The 32 *S*s who registered for the course on Techniques of Programmed Instruction were randomly assigned to an objective group and a no-objective group. The hypotheses, based on previous laboratory studies, that objectives would decrease test-item-response latency, increase study time, and facilitate performance on unit tests were not supported. Objectives did significantly reduce state anxiety; however even that effect diminished as the course progressed. Apparently graduate students are able to "psych out" a course very rapidly, and objectives have little effect.

COLLEGE INSTRUCTION

Evaluated and Non-Evaluated Higher Education

WALTER M. VERNON and GARY C. RAMSEYER, Illinois State University

University students were exposed to three conditions: a traditional grading system, a pass-no credit system, and non-evaluation. The amount of learning during a semester, as indicated by the percentage of correct answers on seven examinations, was compared. There was a highly significant difference in achievement, $p < .001$, with the traditional group being highest and the non-evaluated group lowest in scoring. Supplementary data established that actual study time paralleled the obtained achievement differences, indicating an apparent deficit in the motivation to study in both non-traditional groups.

Selected Instructional Strategies in Computer-Managed Instruction

R. MICHAEL LAWLER, University of Florida; WALTER DICK and MARION RISER, Florida State University

One hundred sixty-seven undergraduates in a health education course were assigned to 4 treatment groups. One group received traditional classroom instruction (CI) and served as a control. The remaining students were randomly assigned to one of three CMI treatments. For these latter students, the course was divided into 14 modules with a total of 32 objectives. The results demonstrated a general superiority of the CMI groups. The CMI group provided with remedial prescriptions and required to reach mastery had significantly greater mean final examination scores than the group which was not required to reach mastery nor given prescriptions.

Mastery Learning Options in Teaching Educational Psychology

WALTER G. HAPKIEWICZ, Michigan State University

A mastery learning strategy was employed in two successive terms in which educational psychology was taught to teachers. Various levels of mastery were specified and students selected the level of performance at which they wished to achieve. When compared to a more traditional course taught over the same period of time, students in the mastery group demonstrated superior achievement and expressed more positive attitudes toward the course. Given the instructional conditions nearly 80% of the students elected to master the course at the highest level. This appears to indicate that *requiring* high levels of performance may be unnecessary.

Achievement as a Function of External Organizers and Organizing Ability

RICHARD A. GRABER, Illinois State College; ROBERT S. MEANS, West Chester State College; GLADYS H. MEANS, Cheyney State College; BILLY F. ELSOM and THOMAS JOHNSTEN, Oklahoma State University

*S*s (143) enrolled in an undergraduate chemistry class were rank ordered by their performance on a test of organizing ability. The median was used to form two groups—good organizers (GO) and poor organizers (PO). *S*s within these groups were randomly assigned to treatments. Treatment I *S*s received an advance organizer followed by a learning passage. Treatment II *S*s received the same organizer preceded by the learning passage. Treatment III *S*s received an historical non-organizer and the learning passage. No significant differences were observed on treatment or interaction, but GO *S*s achieved significantly higher learning passage scores than PO *S*s.

The Effect of Continuous Progress Instruction on Acquisition, Transfer, and Retention in Introductory College Physics and on College Instructor Involvement in Curriculum Development

ELLEN D. GAGNE, J. WILLIAM MOORE and WILLIAM E. HAUCK, Bucknell University

The purpose of this study was to determine the effects of Continuous Progress (mastery) Instruction on acquisition, transfer, and retention in an introductory college physics course. In addition, the effect on the professor of participation in curriculum development was observed.

Freshmen were blocked on major and randomly assigned to Continuous Progress of Traditional Instruction groups. The Continuous Progress group showed greater acquisition, greater transfer to a related course, and greater retention a year later. Anecdotal evidence supports a more positive attitude towards Physics for Continuous Progress students. Also the professor involved in the experiment became involved in other curriculum experiments later on.

COMPUTER ASSISTED INSTRUCTION

A Comparison of Two Public School Computer-Assisted Instruction Projects

SUSAN S. TAYLOR, DUNCAN N. HANSEN, BOBBY R. BROWN, Florida State University

Two public school Computer-Assisted Instruction (CAI) projects, one in Kansas City, Missouri, and one in Wakulla County, Florida, are compared with respect to their different approaches to such problems as facilities, staffing, curriculum, operations, teacher involvement, and university-school district relations. In addition to a discussion of the developmental and operational differences, the results of each project are summarized and recommendations are made for future CAI research in a public school district.

A Concept-Sampling Procedure for Quiz-Oriented Instruction

DAVID W. McMULLEN, State University of New York, Stony Brook

As a first step in developing an instructional support system that provides individual diagnosis and prescription within large classes, a concept-sampling procedure was developed in the context of frequent computer quizzes, each acting as an entry point within the system. From a bank of concepts and concept-properties related to a topic, a random sample was selected and presented with continuous feedback and scoring. Support strategies for those unable to "exit the system" at each point (i.e. pass each quiz) are described as implemented for an educational psychology course. Student reactions favored the procedure, though a number of refinements were shown to be needed.

Program vs. Learner Control of Selection of Instruction and Amount of Practice in Computer-Assisted Instruction

WILSON A. JUDD, University of Texas, Austin

Conventional response sensitive branching algorithms were compared with learner control in a computer-assisted instruction (CAI) mathematics program. Two instructional decisions (whether to enter or skip an instructional sequence and when to terminate practice) were investigated in terms of student decisions, posttest scores and student attitudes. Interactions between control method and student ability level were also examined. In general, students were as effective as the algorithm in selecting instructional sequences but less efficient than the algorithm in deciding when to terminate practice. Complex interactions indicate a need for further research to define the role of learner control in CAI.

The Yoked Control for Assessing Branching Effects: Does Individualization Help?

JAMES G. HOLLAND and JEANNE SWICKARD HOFFMAN, Learning Research and Development Center

An especially efficient branching procedure (binary search) was compared with a control group in which each individual was randomly paired with an experimental subject. The match-mates in the two groups received identical sequences of items but the sequence was adaptive only to the measured needs of the branching group. No differences were found in posttest performance between branched and yoked subjects although a linear version of the program was superior to both. The merits of adapting to individual differences should no longer be accepted on face validity. A yoked control is necessary.

The Development and Evaluation of a Model for the Teaching of Beginning Shorthand Through the Use of Computer Assisted Instruction

KARL G. BORMAN, Pennsylvania State University

The learning theories of Guthrie, Voeks, Sheffield, and Skinner were used to formulate a model for the teaching of beginning shorthand through the use of CAI. Response latencies were used to predict incorrect responses. Each response not completed within the amount of time required for a correct response was predicted to be incorrect after which the subject was shown the correct response and prevented from completing the response. Results indicated that the "interception" method of instruction required more time, a greater number of correct responses, and a lesser number of incorrect responses from the subjects than other methods of instruction.

A COMPUTER PROGRAM FOR DETERMINING WORD DIFFICULTY LEVEL

Natural Language Computerized Comparison of Word List Content

ALBERT J. HARRIS, City University of New York; MILTON D. JACOBSON, University of Virginia

This study involved the development of a natural language computer program which could be effectively used to compare the content and reading level assignments of words in vocabulary and word association lists. A description is provided of the results of using the program successfully to compare four major word lists developed for use in the construction of elementary reading material. The program produced a printout of the list, indicating matched and unmatched words, and tallied information regarding the reading level assignments of the words in the lists.

CONCEPT ACQUISITION

Vicarious Transfer of Rule and Attribute Learning with Low and High Level Concepts

RICHARD T. WALLS and STANLEY H. RUDE, West Virginia University

The study assessed contributions of rule and attribute learning to solution of low (conjunctive) and high (conditional) level concept attainment problems. Models yoked to observers attained an initial concept followed by intrarule transfer to a problem solved by both models and observers separately. The findings coupled with a previous study provided a close replication of early work, in rule and attribute learning, with complete learning being more difficult than rule or attribute learning. While conjunctive results were remarkably similar for models and observers, high level concept learning required more mean trials and yielded more mean errors, without exception, for observers than for models.

Vicarious Transfer of Low and High Level Concepts

RICHARD T. WALLS and STANLEY H. RUDE, West Virginia University

The present experiment compared (a) direct learning and transfer of models with (b) vicarious learning and transfer of observers. Subjects in the latter condition observed yoked models solve the initial problem before solving the transfer task themselves. High (conditional) or low (conjunctive) level concepts were attained by adult subjects in two successive intrarule concept attainment tasks. As imitation theory predicts, models in the high level concept condition showed large positive transfer effects; while this effect for observers was non-significant. However, with the easier concept rule, similar results occurred for models and observers. Implications for further research and classroom processes are discussed.

Transfer of the "Concept" of Class Inclusion

JOHN T. MOUW and JAMES T. HECHT, Southern Illinois University

The major purpose of this experiment was to investigate whether the ability of organizing elements into a hierarchical system or class inclusion ability could be transferred to a classification task using novel stimuli. The third and fourth grade subjects who were trained showed a strong treatment effect. It was concluded that the results support Gagne's cumulative learning notion of operations rather than viewing operations as maturational.

Conceptual Learning and the Self Concept

DEAN L. MEINKE, University of Toledo

Ss were classified as positive or less positive self concepts by a Q-sort technique. Instructions and a principle were manipulated in concept attainment tasks. Positive self concept *Ss* attained concepts significantly faster and offered fewer hypotheses than lower self concept *Ss*. Significant effects were found for instructions and the principle. *Ss* became more efficient as the number of concept problems increased. A significant instructions by principle by repeated measure effect was found on time to criterion. For number of cards and amount of potential information there was a significant self concept by principle by repeated measures interaction effect.

The Effect of Risk on Concept Acquisition

W. BARRY BIDDLE, J. WILLIAM MOORE, WILLIAM E. HAUCK, Bucknell University; JOHN C. HOUTZ, Purdue University

Thirty-six ninth-grade students of average IQ were randomly assigned to six treatment groups. Two groups received good positive instances (GP), two good negative and good positive instances (GN) and two poor negative and good positive instances (PN). One group of each set performed under risk conditions and the other under non-risk conditions. All *Ss* were shown instances of concepts made up of geometric figures. Risk *Ss* were given money which was taken away for wrong guesses and new instances. Non-risk *Ss* were given money for each concept correctly identified. It was found that *Ss* using GP instances performed best and that risk interfered with the use of GN instances. Risk did improve the performance of GP and PN *Ss*.

CONCEPT LEARNING

Cognitive Style and Conditional Concept Learning

J. KENT DAVIS, Purdue University

The primary purpose of this study was to empirically determine whether or not an individual's cognitive style differentially influenced his performance on an easy or difficult conditional concept learning problem. Thirty-six analytic and thirty-six global subjects learned one of two problems. The major results showed that analytic subjects performed significantly better than global subjects on the easy problem, but that there was no significant differences on the difficult problem.

The results are discussed in terms of different learning strategies employed by analytic and global cognitive styles.

Cognitive Style and Inquiry Strategy: A Five Year Study

NORVAL C. SCOTT, JR., Wayne State University

The purpose was to determine the longitudinal effects on the Inquiry Strategy Method on the pupil's styles of categorization. Two groups of inquiry students (experimentals) and non-inquiry pupils (comparisons) were administered the Sigel Cognitive Style Test (SCST). The longitudinal groups of experimentals and comparisons had the SCST in 1966 (seventh grade) and in 1971 (high school seniors). The cross sectional groups had the SCST in 1970 (high school seniors). Chi-square indicated that both Inquiry groups were significantly more analytical in styles of categorization than were the comparison groups. Implications for analytical style are discussed.

The Effect of Stimulating State Epistemic-Curiosity on State Anxiety and Performance in CMI Learning Tasks

DARLENE L. HEINRICH and DUNCAN N. HANSEN, Florida State University

An investigation of the effects of stimulating state epistemic curiosity on states of anxiety and short and long term retention was conducted using CAI Health Education course modules. Curiosity stimulating introductions to modules were found to significantly reduce state anxiety while high curiosity states were associated with higher short term retention, but lower long term retention in comparison with low state curious subjects. Significant interactions were also found between Anxiety and Curiosity Traits, and related measures of states and performance. Regression analyses were used to study the relationship of variables for prediction in optimal arousal models of learning.

Individual Differences in Preference, Saliency and Concept Identification Performance

GERALD J. CASON, University of Texas, Austin

Previous studies obtained good estimates of dimension saliency for groups on the basis of concept identification problem (CIP) data. 29 *S*s were given 12 CIP defined on 4 binary dimensions and a choice test (CT) based on the method of modified triadic comparisons. Analysis of variance on CIP data yielded a significant ($p < .01$) preference for the relevant dimension effect. The mean of the saliencies estimated from CT data for individual *S*s on the dimensions *number* and *shape* were, as expected, not significantly different ($p > .30$) from the group estimates derived from CIP data. Evidence was found indicating heterogeneity of saliency.

Coping Style, Sense of Competence and Achievement

GUY J. MANASTER, University of Texas, Austin

The purpose was to test four hypotheses relating children's coping style and sense of competence (as measured by a projective, Story Completion, instrument) and their school achievement, and thereby to test a predictive model. Two hundred fifty 10 and 14 year old male subjects completed the instrument in class. Reliability of combined coping style and sense of competence variables was determined. Correlation and regression analyses were used to test and confirm all hypotheses. A new model with three types of coping behavior influencing achievement, while still assuming achievement behavior is dictated by sense of competence, is presented.

CONCEPT LEARNING II

The Effect of Review Techniques and Instance Presentation on Concept Learning Tasks

JON I. YOUNG, Brigham Young University

This experimental research tested eight hypotheses relating mode of instance presentation, review techniques and probability levels of instances. Identification of trochaic meter poetry was the experimental task. One hundred and thirty *S*s were randomly assigned to twelve treatments and one control. Results are being analyzed by a three-way analysis of covariance on pre- and posttest scores, and analysis of variance on posttest and learning scores. Preliminary results indicate that simultaneous presentation is more effective than sequential presentation, and specific review produces fewer errors than no review. Undergeneralization errors occur with sequential presentation and review compensates for high probability instances.

The Effects of Different Types of Positive and Negative Instances in Concept Learning

JOHN C. HOUTZ and J. WILLIAM MOORE, Bucknell University; J. KENT DAVIS, Purdue University

Two different types of positive and negative instances were constructed, based on the structural relationships between successive instances in a learning series. 171 eighth-graders were given series of only positive instances or alternating positive and negative instances of different types. Non-dimensional concepts were used to more accurately approximate school-related concepts. Most effective learning occurred from series of only positive instances which shared no irrelevant attributes. Most effective learning occurred from series of alternating positive and negative instances when the negatives were identical to the positives immediately preceding them in every attribute save one, omitted relevant attribute.

Pictorial Mode of Rendition and Associated Responses

NORMAN C. HIGGINS, Arizona State University

This study sought to determine whether selected modes of rendering illustrations effected the number and nature of descriptive adjectives evoked in a restricted verbal association task. Stimulus-objects rendered as color photographs, black and white photographs and line-drawings were presented to *S*s with instructions to write as many adjectives descriptive of the object presented as possible in a 30 second interval. Repeated-measures analysis of variance indicated that differences in number and nature of responses could be attributed to both mode of rendition and stimulus-object employed. The findings and scaling procedures employed are discussed.

The Effects of Type, Identifiability, and Variety of Instructional Instances on Subject Matter Concept Attainment

R. CARL HARRIS, Pennsylvania State University

Subject matter concept attainment by adult *S*s was studied by experimentally manipulating instructional instances which were either positive or negative, clear or obscure, or presented in large or small variety. Training and testing instances were composed of case studies communicated via prose descriptions that had been analyzed for relevant and irrelevant attributes. Conceptualization was defined as generalization within and discrimination between classes and was assessed by having 176 undergraduate volunteers classify new positive and negative case studies after instruction from a definition and selected instances. Two, three-way ANOVs followed by t-tests revealed that instance type, identifiability, and variety have differential effects on generalization and discrimination.

Hypothesis Generation, Evaluation, and Memory Abilities in Adult Human Concept Learning

CAROLYN L. CASON, GERALD J. CASON, DICK CALKINS, MICHAEL C. PELFREY, ROBERT J. COSTELLO, and JANINE BETHSCHEIDER, University of Texas, Austin

Previous studies using alphabetic stimuli (AS) found 3 abilities associated with concept learning problem (CLP) performance. 134 *S*s assigned randomly to 2 treatments: (a) information on CLP solution provided and (b) no information provided took identical AS and numeric stimuli (NS) ability tests and NS CLP. Factor analysis of the ability tests yielded the 3 hypothesized factors. Analysis of variance of CLP data revealed a significant treatment effect and evaluation by generation interaction. The non-significant treatment by generation interaction was nevertheless in the expected direction. CLP performance was associated with cognitive abilities in 2 content domains.

CREATIVITY

Relationships Between Figural Creativity and Grades in a College of Fine and Applied Arts

WILLIAM M. STALLINGS and GERALD M. GILLMORE, University of Illinois, Urbana-Champaign

A Torrance Figural Test of Creative Thinking was administered to freshmen in various fine and applied arts curricula with the hope of: (a) contributing to construct validity and (b) enhancing the predictability of grades in courses which presumably elicit creative behavior. Four creativity variables were correlated with grades and ACT scores. Of 68 correlations computed, one was significant. Furthermore, the Torrance variables did not significantly augment the correlations between ACT Composite and grades. Scores on the Torrance variables did discriminate among the students in the major curricula. Nevertheless, little support was found for the test's construct validity.

Facilitative Effects of Practice upon Nonverbal Creativity

WILLIAM E. ROWETON and HERBERT L. SPENCER, JR., Indiana State University

Numerous studies of verbal creativity indicate that idea originality increases progressively as more ideas are produced. The present study tested the effects of practice upon nonverbal creativity. Thirty-two fifth grade children were administered Form A and/or Form B of Torrance's picture completion task for five consecutive days. Figural originality increased with practice only on certain task items and, overall, only on Form A. Results were traceable to differences inherent in the alternate forms of the test, peculiarities of task items, amount of practice, etc. Apparently, extended effort does not indiscriminately enhance figural originality in nonverbal creative problem solving.

An Analysis of the Trend of Originality Scores on a Measure of Creativity

IRENE S. SHIGAKI, New York University

Verbal and Figural protocols for the *Torrance Tests of Creative Thinking* administered to children in the intermediate grades were examined to test the hypothesis that there would be an increase in original responses in the later sections of a sequence of responses. Answers on each subtest were divided into five equal parts maintaining the order of responses. Chi-square tests were employed yielding a significant value for the Verbal Form ($x^2 = 31.68$, df = 4, $p = < .001$), but not for the Figural Form. Original responses on the Verbal Form became progressively more frequent with each successive segment of responses.

Investigation of the Creative Productivity of Groups

STEVEN V. OWEN, JOSEPH S. RENZULLI, and CAROLYN CALLAHAN, University of Connecticut

The objectives of this study were to determine whether participation in a group problem solving situation facilitated (1) creative production, and (2) attitudes toward creative production among youngsters from various socioeconomic levels. Subjects were 270 fourth, fifth, and sixth grade students from schools serving low and middle SES populations. Criterion measures consisted of the *Torrance Tests of Creative Thinking,* and a set of attitudinal rating scales. Results of factorial ANOVA's suggested that group participation facilitates both creative production and attitudes among higher SES subjects. Implications for creativity training programs and reducing pressure toward group conformity are discussed.

Personality and Cognitive Correlates of Creativity in Writers

ARLENE RING BARRO, University of California, Los Angeles

This study sought to determine whether personality or cognitive-factor tests are better able to distinguish between more creative and less creative writers. The subjects were 34 male graduate student writers whose performance as creative writers was rated by their professors. Each subject was tested with The California Psychological Inventory, the Study of Values, and Guilford's divergent production tests. Both simple and multiple correlation analyses support the view that personality characteristics, rather than cognitive abilities, hold the key to identifying creative potential in writers. A multiple regression equation relating rated creativity to personality test scores is presented.

DEVELOPING TEACHER CHANGE AGENTS FOR DESEGREGATED SCHOOLS

The Cadre Approach to Teacher Training: Developing Change Agents for Desegregated Schools

JAMES L. DESLONDE, University of California, Riverside; ELIZABETH FLACH, Riverside Unified School District

Students were released from traditional credential courses to become members of the staff of two desegregated elementary schools. The program attempted to train students as well as certified teachers to be more effective in desegregated classrooms. Evaluation data support the following conclusions: (a) the authors suggest a school change model to measure the degree of integration within a school building, (b) university and school district personnel encouraged a "modeling process" on the part of the student teachers; highest G.P.A.'s and M.T.A.I. scores were for students who viewed themselves as change agents; C.P.I. scores indicate change agent students have "non-traditional" profiles.

EARLY CHILDHOOD EDUCATION

A Two-Year Study of Intervention with Disadvantaged Infants

RUSSELL A. DUSEWICZ, Pennsylvania Department of Education; MARTIN J. HIGGINS, West Chester State College

A two-year study of an infant intervention program demonstrated remarkable results in working with over 100 disadvantaged children from 16 to 40 months of age. Center Groups attending a centrally located cognitive enrichment program daily were compared with Home Groups receiving 80 minutes of tutoring in the home weekly. Center Groups were exposed to a program initially with a sensory emphasis aimed at building a firm foundation in perceptual-integrative skills and subsequently involving a higher-order cognitive activities emphasis. Analyses of covariance on a wide variety of measures overwhelmingly indicated significant differences in cognitive and language development favoring the Center Program.

A Five-Year Longitudinal Comparison of a Traditional Versus Structured Preschool Program on Cognitive, Social, and Affective Variables

MERLE B. KARNES, R. REID ZEHRBACH, JAMES A. TESKA, University of Illinois, Urbana-Champaign

Data pertinent to the longitudinal (5-year) effects of the Karnes' Preschool Program on four-year-old children relative to cognitive, social, and affective variables reveal differential effects associated with programming. Cognitively, the Karnes program had a strong initial positive effect on the intellectual functioning of children which even after five years was significantly above initial level. Academically, children in the Karnes program, after four years, were achieving at a significantly higher level. In spite of dire predictions of negative effects of a structured program on the social and affective growth of children, these beliefs were refuted.

A New Professional Role in Early Childhood Education

R. REID ZEHRBACH, MERLE B. KARNES, JAMES A. TESKA, University of Illinois, Urbana-Champaign

The traditional concept of education—one teacher in a classroom—is ineffective with children from low-income families. Six studies conducted at the University of Illinois, Urbana-Champaign Campus, provide the basis for a new role model in early education—the Paraprofessional Educator Manager (PEM). The model uses one professionally trained individual to direct the activities of two teams, each composed of three paraprofessional teachers and one paraprofessional home visitor, who use a structured approach for educating young children which involves both the classroom and home setting. Implications for recruiting and training individuals to implement the model are discussed.

How Mothers Teach

PATRICIA P. OLMSTED and R. EMILE JESTER, University of Florida

The teaching styles of mothers were studied as a function of socioeconomic status. The results showed that: (1) low socioeconomic status mothers did not adequately introduce a learning task with advance organizers but high socioeconomic status mothers did; (2) low socioeconomic status mothers were less thorough in their presentation than were high socioeconomic status mothers; (3) low socioeconomic status mothers provided less rationale for corrections in the task than did high socioeconomic status mothers; and (4) low socioeconomic status mothers used negative methods for control more frequently than high socioeconomic status mothers. The results are discussed with implications for the public school system.

Self-Instruction by Four-Year-Old Children

EVAN R. KEISLAR and JEAN PHINNEY, University of California, Los Angeles

Four formative evaluation studies, involving 79 Headstart children, were conducted to develop a self-instructional game where each child could learn by using a picture book as an optional information source. For the initial paired-associate task of learning where animals live, a trial-and-error strategy was inferior to self-prompting. Rewarding children for avoiding overuse of the book was less effective than rewarding any strategy indiscriminately. In a natural classroom setting, almost all children chose to play the game; one-third learned up to a 90% criterion. Observational data are presented; implications for developing better self-instructional skills are discussed.

EARLY CHILDHOOD EDUCATION II

The Effect of Informal and Formal British Infant Schools on Reading Achievement

LAURA D. HARCKHAM, Manhattan College; DONALD V. ERGER, Herricks Public Schools

British infant schools have attracted attention because of their child-centered programs. It was hypothesized that reading achievement would be significantly higher for children in these schools than for children in traditional schools. Three samples of British children were used—inner-city, suburban, and pairs of siblings, one of whom had learned by each method. Scores on the Holborn Reading Analysis Test were compared for subjects in informal and formal schools, and *t*-tests in three analyses showed no significant differences. Apparently advantages of the informal method do not lie in the area of greater immediate achievement, as measured by current instruments.

Home Reading Instruction for Preschoolers with Systematic Reinforcement: A Longitudinal Experimental Analysis

JAMES B. BREILING and ANNETTE BREILING, Institute for Behavioral Research

Staats' preschool reading instruction with a single *S* operant design was replicated and extended. Social and token reinforcement in daily 15-30 minute sessions conducted over an initial 2½ months resulted in second grade reading by two 3-year-olds. Instruction was discontinued and reinstated several times over a four year period. Gains dropped when instruction was first discontinued but later became stable. *S*2 made her gains despite a hearing handicap and speech retardation. IQs went from average at age 3 to off the Stanford Binet scale (170+) for *S*1 at age 6-4. Social adjustment has been good for both *S*s. The work is being extended with other parents.

Helping Problem Learners During the Early Childhood Years

DOREEN R. STEG and ANTHONY D'ANNUNZIO, Drexel University

Study compares effects of early childhood instructional programs—designed to develop auditory and visual perception skills by stressing differential diagnosis, prescriptive suggestions and concomitant procedures—with programs typically found in nursery schools. Treatment group of twelve paired on intelligence, auditory and visual perception scores. Treatment group split in two, each receiving instruction engaging weaker sense modality, mainly visual for one, mainly auditory for the other. Statistical analysis revealed significantly higher scores on both perceptual indices for the treatment groups. Study suggests need to focus upon modification of behaviors basic to learning (e.g., perception) and catering to the specificity of learner inadequacies.

The Preschooler: Socioeconomic Status, Race, and Incidental Learning

JANET D. SMITH, LAWRENCE W. LEZOTTE, and WILLIAM H. SCHMIDT, Michigan State University

Incidental learning in forty-eight middle and lower class black and white preschool children was investigated to explore evidence of such learning as it relates to social class, race, and familiarity of material. Two comparable groups were utilized in the customary directed instruction versus no-instruction situation. Subjects were obtained from two local day care centers. The area appears to hold significant implications for additional techniques which might be utilized in preschool instruction. A significant race by type of learning interaction was found.

Auding Achievement of Kindergarten Pupils Related to Selected Pupil Characteristics

MARY N. AYERS, University of South Carolina

The purposes of this study are: (1) to identify the auding (listening comprehension) levels of achievement of kindergarten children and (2) to explore the extent of relationships between the child's auding achievement and selected pupil characteristics. Fifty-one five-year old children enrolled in kindergarten served as the subjects for this study. The auding instrument consists of four selections to be read individually to a child after which he is asked a series of questions to determine the extent to which he can understand what has been read to him. Findings indicated five-year olds can aurally understand materials as high as fifth grade reading level.

THE EDUCATION OF DISADVANTAGED CHILDREN

The Development and Evaluation of a Math Curriculum for Three Year Old Disadvantaged Preschool Children

RUTH H. McCLURE, RUSSELL A. DUSEWICZ and ERNEST L. PETERS, West Chester State College

The present study was undertaken to develop, utilize, and evaluate a beginning math program for disadvantaged preschoolers. Thirteen three-year-olds were randomly assigned to either of two programs: a group instruction program or an individualized instruction program. Thirty-three ten-minute lessons were given over a nine-week period. All children were pre- and posttested on a specially constructed math concepts achievement test. A correlated t-test on achievement gain indicated significant learning in both groups during training. An analysis of covariance on posttest scores across the two types of programs revealed significant achievement superiority for the individualized program.

Effects of a Five-year Compensatory Education Program on Social, Intellectual, Linguistic, and Academic Development

ROBERT L. SPAULDING, San Jose State College

The effects of experimental programs developed for a small-scale school system enrolling approximately 300 disadvantaged children aged two through ten are presented. Intervention methods included behavior modification, directed teaching, discovery pedagogy, programmed instruction, team-teaching, cross-aged grouping, peer-tutoring, self-directed programming, dramatic-play techniques, and automated instructional devices. Longitudinal data were gathered in socialization, intellectual development, language development, and academic achievement. Significant differences favoring experimental groups were found for socialization and intellectual development. Non-significant differences were found in most comparisons in language development and academic achievement. Results supported the value of early educational intervention in overcoming specific decrements in social and intellectual development.

The Automated Instruction of Practical Reading Skills to Disadvantaged Sixth Grade Children

HAROLD R. STRANG, University of Virginia

An assessment was made of the effects of an automated tutoring program in teaching sixth grade disadvantaged children practical reading skills. After a 51 question pretest experimental students received 20 sessions of automated instruction on 24 skills. Correct answering yielded extrinsic reinforcement; errors yielded audio tutoring. Students then received a 51 skill posttest. The experimental group's cross-test gain more than doubled that recorded by a control group. While experimental students showed greatest gains on skills trained during instruction, they also showed significant improvement on uninstructed skills.

Improvement of Academic Performance of Poor-Prognosis Children Through the Use of an Individualized Instructional Program

LAUREN B. RESNICK and MARGARET C. WANG, University of Pittsburgh

This paper examines the effect of a year-long individualized mathematics program on the achievement of young children in an inner-city school. Achievement levels approximately six months ahead of grade level are found for children in the program while, children not in the program but in the same school, fall approximately six months behind grade level by the second grade. The relationship of traditional predictors of academic success (IQ and SES variables) is found to diminish with use of the curriculum while the number of curriculum objectives actually mastered predicts standardized achievement test performance quite well.

An Investigation of Attitudes among Potential Dropouts from Minority Groups during their Freshman Year in High School

HERSHEL D. THORNBURG, The University of Arizona

Forty-three high risk potential dropouts were selected to be in a special academic program consisting of English and mathematics in an attempt to (a) increase holding power, and (b) produce positive attitude shift toward self and school in a heavily impacted minority youth area of rural Arizona. After one year of evaluation more of these youth remained in school than comparable vocationally-placed and control youth. Attitudes toward school were more positive among this group as well (.01 level). Special academic students made a profound shift in self-concept (.001 level) as compared to the other two groups. All three findings attest to program effectiveness.

EFFECT OF CLASSROOM ORGANIZATION ON TEACHER AND PUPIL BEHAVIOR

Teachers' and Pupils' Roles in Variously Structured Classroom Settings and Subsettings: A Report from the Columbia Classroom Environments Project

JOSEPH C. GRANNIS, SALLY W. KAMINSKY and WALTER M. FURMAN, Teachers College, Columbia University

To examine a hypothesized association of the knowledge, social, and physical orders of learning environments, observations have been conducted in exemplar classrooms of four different primary grade instructional programs. The analysis reveals both the structural coherence of the programs internally and unintended or unsuspected regularities across programs. Teachers' norms for pupil behavior, setting prerequisites for knowledge transmission and social control, and pupils' development as learners, are hypothesized to explain the observed regularities and differences. The analysis is based upon classroom behavior stream observations, behavior setting observations, and videotapes, as well as teacher questionnaire and interview data.

EFFECTS OF MODELING ON COOPERATIVE BEHAVIOR

Social Learning Theory and Group Behavioral Change

DAVID TURNER, Illinois Benedictine College; BRUCE BALOW, U. S. Office of Education

This study investigated whether collaborative and socially sensitive behaviors, necessary in group problem solving, can be taught to emotionally disturbed children in residential treatment centers. The instrument used was the *Russell Sage Social Relations Test,* yielding scores on 10 variables. The sample consisted of 180 males ranging in age from nine through twelve years in residential centers.

Analyses of posttest variables of the experimental group (exposed to a film modeling cooperative behaviors) and the control group (exposed to a "neutral" film) indicated that modeling of behaviors through a filmed technique can produce positive changes in the cooperative group behaviors of children identified as emotionally disturbed.

EXPORTABLE USER TRAINING SYSTEMS

Exportable User Training: A Developmental Strategy

JOHN A. HYLTON, Southwest Regional Laboratory for Educational Research and Development; PAUL E. RESTA, University of New Mexico

This document presents a model for the development of user training programs for validated instructional systems. Important considerations included within are identification of user categories, statement of user functions, selection of the training mode, and the iterative developmental cycle involved. Advantages and disadvantages of the proposed model are briefly discussed.

FACILITATIVE EFFECTS OF INTERFERENCE ON RETENTION AND TRANSFER

Interference During Learning as a Source of Facilitation in Subsequent Transfer and Retention

WILLIAM F. BATTIG, University of Colorado

Based on nine years of research in ours and other human-learning laboratories, a wealth of evidence is summarized and discussed which indicates that initial learning under conditions of high intratask interference leads to facilitated subsequent retention and transfer of the learned material. Since this runs directly counter to underlying principles and practices governing most present-day educational procedures (such as programmed learning), the potential significance for educational research and practice of this inverse relationship (whereby increased difficulty of learning may result in better retention and transfer thereof) is also argued and discussed.

FACTORS AFFECTING PUPIL COGNITIVE GROWTH IN DISADVANTAGED CHILDREN

Analyses of Classroom Behavior and Pupil Growth in Project Follow Through

ROBERT S. SOAR, MARJORIE RAGOSTA, and EARL BLEKKING, University of Florida; RUTH M. SOAR, Florida Educational and Research Development Council

This phase of the national evaluation of Follow Through collected observation data on four instruments in 430 classrooms (K-2) over three years. These data were factor analyzed and used to describe classrooms. Measures of pupil cognitive growth were reduced to three factor scores representing different levels of complexity, and these factor scores were related to the classroom behavior measures. The results indicate: different styles of teaching were supportive of different kinds of pupil growth, but relationships were often nonlinear, and factors which discriminated between experimental approaches often did not relate to pupil growth, whereas more subtle factors did.

FORMATIVE EVALUATION OF MULTI-MEDIA SELF-INSTRUCTIONAL SYSTEMS

Development and Validation of a Model for Formative Evaluation of Multi-Media Self-Instructional Learning Systems

ALLAN J. ABEDOR, Michigan State University

Existing models of formative evaluation are inadequate when dealing with complex multi-media instructional systems. A new model was developed, using a small group ($N = 12$) tryout and debriefing procedure as the main method of identifying instructional problems and developing appropriate revisions. The model was validated in three field experiments using a pre-post control group design. Two experiments showed statistically significant differences ($p < .01$) favoring the experimental (revised version) group on all four dependent measures (post test, gain score, attitude survey, and % achieving criterion). The third experiment showed a significant difference ($p < .05$) on the post test only.

A GENERATIVE LINGUISTIC SYSTEM FOR INSTRUCTIONAL DESIGNERS

Toward an Instructional Pattern Language

RALPH E. GRUBB, Teachers College, Columbia University

Instructional designers have found from sad experience that the design of instruction does not flow from taxonomies of research findings. This problem is basic to all Linnaean systems since they are associative rather than generative. This paper proposes for the designer a linguistic system that permits him to generate from lexical elements an infinite number of instructional patterns. This public language will permit the designer to converse with his colleagues and enable design to improve cumulatively. Additionally, each design statement, however provisional, will serve as a research proposal. Comparisons will be made with an existing environmental pattern language for architecture.

INCREASING UNDERGRADUATE VERBAL INTERACTION

Strategies for Increasing Self-Initiated Verbal Interaction

SAMUEL SECURRO, JR. and RICHARD T. WALLS, West Virginia University

The present experiment compared the effects of experimental treatments on verbal responsiveness of 120 undergraduates participating in small group discussions. The design crossed three verbal recording strategies (student recorded own responses, leader recorded responses with subject's knowledge, and leader recorded responses without subject's knowledge), four group leaders (one per treatment), and four repeated recording sessions. Results showed that responsiveness was differentially facilitated by the effects of recording, with student recording showing a greater frequency of responses, and by repeated sessions of the same type. The results are discussed in terms of utility of recording strategies for classroom practice and research.

INDIVIDUALIZED INSTRUCTION

Student Response to Self-Scoring Opportunities Provided by an Individualized Instructional Program

HENRY J. OLES, Southwest Texas State University; JOHN O. BOLVIN, University of Pittsburgh

Students in the University of Pittsburgh's Individually Prescribed Instruction Program are taught to self-score their own math work as a means of encouraging the development of the ability to be self-evaluative. A technique to evaluate the degree and form of student misuse of self-scoring was developed. Results showed that the majority of the third through fifth grade students misused the process but even for a given individual there was no consistent pattern to these misuses. Programs that encourage self-evaluation need to develop a means of reinforcing desirable behavior and detecting inappropriate behavior.

Peer Tutoring as a Technique for Teaching the Unmotivated

MADAN MOHAN, State University of New York, Fredonia

The study investigated the effects of peer tutoring on mathematics achievement, motivation level, attitude toward school and self-concept by comparing the gains of tutors (N = 16) and tutees (N = 16) for the above variables against their counterparts in the control group using multivariate analysis of covariance. The reactions to the program from teachers, parents, experimental subjects and other school personnel were also obtained. The evaluation clearly indicated that one-to-one tutorial interaction favorably affected each individual's "fabric of knowledge, attitude and self-concept" and the program was fully supported by consumers and practitioners of education.

Individualization of Composition Instruction through the Use of Dictation Equipment and Transformational Sentence-Combining

THOMAS P. McGUINESS, Pennsylvania Department of Education; WILLIAM H. HEINER, Bucknell University

Two new aspects of English composition instruction were studied in a ten-week program involving four teachers and 104 grade 7 pupils randomly assigned to three treatment groups and a control group. Dictation equipment was used by teachers to individualize composition instruction and by pupils to construct written compositions from their spoken compositions. A program of transformational sentence-combining utilizing models of syntactic structures and a system of positive reinforcement of desired writing behaviors replaced traditional instruction in grammar and composition. Investigated were the effects of the two experimental variables upon pupils syntactic fluency and pupils' attitudes toward the study of composition.

The Effects of Various Review Paradigms and Student Pacing on Performance in an Individualized Computer-Managed Undergraduate Course

THOMAS G. DUNN, University of Toledo

The purpose of this study was to determine: (a) whether reviews facilitate retention; (b) the relative effectiveness of two review formats; (c) the optimum placement of reviews; and (d) the effect of student pacing on performance. Undergraduates enrolled in a Health Education course served as subjects. The results indicated that reviews did not facilitate performance on several dependent measures and no format or placement analyses were statistically significant. With respect to pacing, consistent pacers performed significantly better than nonconsistent pacers on several dependent measures. Also, an amount of review by pacing interaction suggested that only the nonconsistent pacers may need reviews.

A Time-Based Methodology for Assessment of Individual Performance

ENRIQUE ALBA, University of Florida

An experiment was conducted using a methodology that considers the duration of each component within a performance movement. A performance movement consists of 1) a stimulus situation, (e.g., question); 2) the interval between the termination of the stimulus and the initiation of the response; and 3) the response itself. Each of the three components is measured on a time scale and the results are represented in a cumulative graph. Incorrect responses are also recorded. The resulting measures are particularly sensitive to experimental manipulations. It is concluded that the methodology will aid in research efforts dealing with instructional materials development.

INFORMATION PROCESSING

The Effects of Training of Analysis upon the Responding Style of Impulsive Children

MARNÉ B. ISAKSON, J. WILLIAM MOORE, Bucknell University

Thirty-four second-grade boys identified as impulsive responders in terms of response time and errors were trained to use details to see if more reflective behavior would result. One cause of impulsivity postulated was underdeveloped analytic skills. Training involved three phases with response time being allowed to vary. Results showed *Ss* trained made fewer errors than control *Ss* ($p < .005$). No differences in response time were found. Results suggest that impulsives make more errors because of nonanalytic behavior rather than because of fast responding, that response time and errors are independent, and that nonanalytic behavior can be modified through training.

The Feeling-of-Knowing: An Assessment of Factors Affecting Its Accuracy

RICHARD L. ISAKSON and WILLIAM E. HAUCK, Bucknell University

The study assesses the feeling-of-knowing (FOK) accuracy and contributes to the understanding of its role in information processing. Subjects learned paired-associates under two conditions: advanced organizers and no advanced organizers. Subjects were tested on learned and nonlearned pairs. The test involved recall and recognition, each accompanied by ratings of FOK strength. Results showed that FOK after recall was not accurate while FOK after recognition was accurate. Advanced organizers had no effect on FOK accuracy yet they facilitated recognition. The effects on FOK of two other factors were examined as was the relationships between recall and recognition times and FOK strength and accuracy.

Personality Factors and Information Demand in Decision Making

BEATRICE HARRIS, Yeshiva University

The influence of category width, the need to achieve, fear of failure, utility of reward and payoff on information demand was studied, using 168 male high school students. In general, when there was no reward or incentive, the motives fear of failure and the need to achieve were not elicited to differentiate subjects' strategies in decision making. Also, with no incentive an individual's intelligence was not employed to develop a strategy. When a monetary incentive was offered, the subject's value of money affected his behavior when making decisions, overriding motives such as the need to achieve and fear of failure.

Organization, Comprehension, and Some Evidence "How"

JOEL R. LEVIN, Wisconsin Research and Development Center for Cognitive Learning

Fifty-four fourth graders, subsequently classified on the basis of reading ability, were given stories to study in either printed or pictorial form. Half of the subjects given the printed version received a visual imagery organizational strategy prior to studying the passage. As predicted, imagery organization facilitated comprehension of the story, with the strategy being differentially effective for two kinds of poor readers. Those with adequate vocabulary skills benefited more from imagery instructions than those with inadequate vocabulary skills. The implications of this interaction were discussed with regard to the design of future strategy-training experiments.

Perceptual Coding as a Function of IQ, MA, and CA

GNANAOLIVU AARON, Indiana State University

The relationship between IQ, MA, CA, and Coding ability was investigated. Coding ability denotes transformations of input information into meaningful patterns. It was measured through a test which required *Ss* to reproduce visual patterns from memory. IQ and MA were *Ss'* performance on two group tests of intelligence. *Ss* were 48 boys from ninth, fifth, and first grades. It was found that MA was a better predictor of coding ability than IQ or CA. The high correlation coefficient obtained between MA and coding ability was interpreted to reflect the importance of coding ability as a fundamental factor in cognitive processes.

INTERACTION OF APTITUDE AND METHOD

Individual Differences, Short-Term Memory and Paired-Associates Learning

MARY L. HOAGLUND, American Institutes for Research; SANDRA PINE and GLENN E. SNELBECKER, Temple University

The relationship between modality preference, presentation modality, type of task, and level of meaningfulness was investigated. Subjects were classified as auditory or visual learners on the basis of paired-associates tasks, and assigned to one of four balanced-order presentations of short-term memory tasks at two levels of meaningfulness. Analysis of variance showed significant main effects for learning style and meaningfulness and interaction between order and meaningfulness. Short-term memory tasks correlated significantly with each other and with measures of intelligence and achievement; paired-associates tasks correlated only with short-term memory visual tasks. No evidence was found for consistent modality preference in individuals.

The Effect of Sequence and Familiarity with Subject Matter on Achievement from Programmed Instruction

SIGMUND TOBIAS, Florida State University

This study examined the effects of sequence in programmed instruction, the degree to which it was moderated by familiarity with content, and the interaction among sequence, ability and anxiety. A total of 117 *Ss* were randomly assigned to a logical or scrambled sequence on two linear programs. As expected, sequence exerted a strong main effect on unfamiliar content but not on subject matter with which *Ss* were previously acquainted. Sequence did interact with ability and anxiety on some dependent measures, though not to the degree previously expected.

The Influence of Verbal Reinforcement and Socioeconomic Status on Task Persistence

GLADYS H. MEANS, Cheyney State College; ROBERT S. MEANS, West Chester State College; JUDITH L. OSBORNE and BILLY F. ELSOM, Oklahoma State University

A 2 x 3 ANOVA design and Duncan's technique were utilized to assess the effect of verbal reinforcement and socioeconomic status on task persistence. Forty-five Middle and 45 Lower socioeconomic status fifth-grade *Ss* were randomly assigned to receive one of three treatments as they worked on an objectively difficult jigsaw puzzle. Treatment I *Ss* received positive reinforcement; Treatment II *Ss* negative reinforcement; and Treatment III *Ss* no verbal reinforcement. Middle socioeconomic *Ss* persisted significantly longer than Lower socioeconomic *Ss* ($p < .10$). Non-reinforced *Ss* persisted significantly longer than both positively ($p < .05$) and negatively reinforced *Ss* ($p < .10$).

The Self Concept of Students in Individually Prescribed Instruction

KARIN R. MYERS, Indiana University

This study assesses the self concepts of students in Individually Prescribed Instruction (IPI). Groups of third-, fifth- and sixth-grade IPI students in Ohio, Pennsylvania, and Illinois were administered the IPAT Children's Personality Questionnaire (The CPQ). There were no significant differences in the self concepts of the two age groups. Significant differences were found in the achievement levels, between the sexes, and in the number of years in the program. Further analyses indicated that the longer the students were in the IPI programs the lower their self concept became regardless of achievement level, sex, or age.

The Generalizability of Aptitude-Treatment Interactions Across Subject Matter

DAVID C. BERLINER, Far West Laboratory for Educational Research and Development

Aptitude-treatment interactions which were obtained and replicated in previous studies were investigated using new subject matter. Lecture instruction was provided 154 *Ss* who took notes, paid attention, or had to respond to questions inserted into the lecture. Generalization of a significant interaction between note-taking and paying attention was established. Regression analyses using the Johnson-Neyman technique revealed that *Ss* high in memory ability perform significantly better on criterion tests when taking notes, while *Ss* low in memory ability who pay attention perform as well or better as those who take notes during lecture instruction.

INSTRUCTIONAL METHODS

Additive Effects of Advance Organizers

MARTIN R. WONG, University of South Florida

It was hypothesized that the effect of advance organizers on learning and retention was additive rather than interactive–i.e., that any increment in score could be accounted for by specific factors such as additional information, additional practice, learning set, etc. 123 college undergraduates studied learning materials in four treatment groups. On five and 37-day retention measures the advance organizer-only group was significantly better than a no-treatment control and was the only group to not decline in score over the 32-day interval. The advance organizer-plus learning group was significantly better than a learning-only group on the shorter retention period but not on the longer.

Video-Taped Playback: A Viable Classroom Technique to Facilitate Student Learning

DONALD M. RONCHI and RICHARD E. RIPPLE, Cornell University

The study was undertaken to determine the effectiveness of video-taped playback as a viable classroom technique to facilitate student learning. Small groups of students from fifth- and sixth-grade social studies classes were organized into three experimental conditions: (a) those who viewed playback of their own group, (b) those who viewed playback of another group, and (c) those who viewed no playback at all. Those groups who experienced video-taped playback of their own group displayed significant increases in performance and in positive attitudes toward problem-solving. These results are discussed in terms of the utility of video-taped playback in a social learning theory paradigm.

The Use of a Structured Tutorial Reading Program in Teaching Nonreading Second Graders in Title I Schools to Read

GRANT VON HARRISON, Brigham Young University; WAYNE NELSON, Nebo School District; LYLE TREGASKIS, Alpine School District

This study was designed to test the potential of a structured tutorial reading program in teaching nonreading second graders how to read. Upper-grade (4th, 5th and 6th) elementary students were used as tutors. The student tutors were trained by teacher-aides in the use of specified tutorial procedures which were derived from established psychological principles of learning. The decoding ability of the experimental group was comparable with a control group consisting of a random sample of the total population of second graders in three non-Title I schools on the posttest.

Development and Research of Training Materials in Instructional Psychology

EVA BAKER, University of California, Los Angeles; EDYS QUELLMALZ, Southwest Regional Laboratory for Educational Research and Development

The development of a program to train educators to use five research-derived instructional techniques will be described. The results of over 12 tryouts, involving 200 subjects, will be reported by trial-to-trial performance improvements on information, discrimination and instructional design tasks. The developers conducted four experiments to aid instructional design decisions. Variables manipulated include the use of text-embedded questions, concept labeling, learner "set," and directions to produce criterion items. Significant differences were found in the concept labeling and criterion production experiments. Conclusions will focus on obtained performance levels, experimental results and operational recommendations to guide future development activities.

The Effect of Manipulation of Class Size on Student Achievement

WILLIAM B. MOODY and R. BARKER BAUSELL, University of Delaware; JOSEPH R. JENKINS, New Mexico State University

Although considerable research has examined the relationship between class size and student achievement, these studies typically concentrate on the instruction of groups of 10 or more. In the present study 249 fourth grade *Ss* were randomly assigned to class sizes of 1, 2, 5, and 23. *Ss* in each of the smaller class sizes displayed significantly greater attainment of ten specific mathematical objectives than did students in the classes containing 23 *Ss*. In addition, one-to-one instruction was significantly superior to each of the three larger instructional settings.

LANGUAGE DEVELOPMENT AND ACQUISITION

A Comparative Investigation of the Casual and Careful Oral Language Styles of Average and Superior Fifth Grade Boys and Girls

JULIE M. JENSEN, University of Texas, Austin

Is there a difference between average and superior fifth grade boys and girls in casual and careful oral language fluency, grammatical control, and function? The study aimed to provide a base for recommendations regarding aspects of language arts curricula for superior fifth grade pupils. Eighty subjects were selected through a two-stage sampling procedure from five Minneapolis, Minnesota public schools. One-hundred word samples of transcribed speech produced within two varying language contexts were analyzed, ultimately providing implications related to the formal teaching of grammar and usage, differential sex expectations, diagnostic skills for elementary teachers, and the relevance of the general term "gifted."

Dialect Proficiency and Auditory Comprehension in Standard and Black Nonstandard English

BETTY B. LEVY, Teachers College, Columbia University

Thirty-two Black second graders were administered 1) a dialect proficiency task (oral repetition of 20 sentences); 2) an auditory comprehension task (taped oral stories and questions). Half of the *Ss* received stories in Standard English; the other half received the stories in Black Nonstandard English. *Ss* were asked to identify the race of the speakers and how well they liked the stories and speakers. *Ss* performed better in the Standard treatment. Within each treatment there was a positive relationship between dialect proficiency and auditory comprehension. *Ss* correctly identified Black Nonstandard speakers but tended to misidentify Standard speakers. Stories were well-liked in both versions.

The Effect of Mode of Presentation on the Linguistic Comprehension of Children from Different Ethnic Groups

MARGARET M. BIERLY, Stanford University; JOAN P. BEAN, University of Massachusetts

Ninety subjects, 45 kindergarten and 45 first graders participated in a study of linguistic comprehension. Three ethnic groups were represented Anglo-American, Black-American and Mexican-American. Twenty-eight sentences including active and passive constructions, direct and indirect object constructions and conjoined constructions, were presented in pictorial, puppet and enactive conditions. The prediction was that performance would be poorest on pictorial items, better in "acting out" sentences and best when the *S* became the string "actor". This prediction held for Anglo-American kindergarten *Ss* only. There were no overall ethnic group differences; and no treatment effects at kindergarten or first grade.

The Relationship between Age and Accuracy of Foreign Language Pronunciation

S. JAY SAMUELS and LINDA L. OLSON, University of Minnesota

The assumption that younger children master the phonological system of a second language more easily than those who are older was tested. Randomly selected groups of 20 elementary, 20 junior high, and 20 college students received 10 lessons of taped German phoneme pronunciation instruction. Phonemes were taught using mimicry drills.

Students were pre-tested, post-tested and given the Raven Intelligence test. ANOVA and ANCOVA on the pre-test indicated no difference among the groups in pronunciation. Contrary to prediction, the ANOVA and ANCOVA on the post-test indicated junior high and college students were significantly superior at pronunciation than the elementary group.

Associative Reaction Time in Language Acquisition

RONALD LEY, State University of New York, Albany; DAVID LOCASCIO, Fairleigh Dickinson University

The results of a systematic program of research conducted over the past several years have established that the associative reaction time of verbal units is an important variable in language acquisition. The findings of this research have led to the development of a new theoretical interpretation of verbal acquisition in which meaningfulness is posited as an index of the stability of a perceptual encoding process and associative reaction time is posited as an index of recallability. The research findings and the evolving theory hold considerable promise for new directions in research in language acquisition.

LEARNING STRATEGIES

The Effects of Selected Experiences on the Ability of Disadvantaged Kindergarten and First Grade Children to Use Properties of Equivalence and Order Relations

DOUGLAS T. OWENS, University of British Columbia

Instruction was given to economically-disadvantaged kindergarten and first grade children on matching relations, length relations, conservation and the transitive property of matching relations. A control group received only the instruction on relations. Univariate analyses showed significance ($p < .01$) due to treatment for Transitivity of Matching Relations. Grade was significant for Matching Relations, Conservation of Matching Relations ($p < .01$), Symmetric Property of Matching Relations, Asymmetric Property of Matching Relations and Reversibility of Matching Relations ($p < .05$), but neither Treatment nor Grade was significant for the six corresponding length relational variables. Performance on a Transitivity Problem was related to Grade but not to treatment.

Acquiring a Mathematical Structure by Discovery and Rule Learning

DENNIS E. EGAN and JAMES G. GREENO, University of Michigan

The study concerned: (1) identifying component processes of discovery and rule learning; (2) describing differences in learning outcomes produced by the two methods; and (3) optimizing learning. In two experiments subjects acquired concepts of probability by discovery or rule versions of programmed instruction. Descriptions of learning by discovery and rule were based on reliable aptitude-treatment interactions involving several problem solving skills. The outcome of discovery seems to be the structural integration of previously known concepts, while the outcome of rule learning is the addition of new structure. Finally, subjects scoring low on tests of relevant abilities performed better when instructed by the rule method.

The Relationship of Success in a Short Term Memory Task to Subjects' Self-Reports of Information Processing Procedures

WILLIAM C. LOW, RICHARD C. BOUTWELL and HARVEY B. BLACK, Brigham Young University

The purpose of this study was to determine if *Ss* have rehearsal strategies available for reporting that are correlated with success in a short term memory task. College students were interviewed as to what strategy they had used in a short term memory task and it was found that success was highly correlated with reports of rehearsal strategies. It is argued that advantage can be taken of this experimental approach for the investigation of diagnostic and instructional techniques in short term memory tasks.

Dydactic Validity of Learner Reports of Information Processing Strategies by Fourth Graders Learning Map Identification

HARVEY B. BLACK, Brigham Young University

Two related studies employing 10-year-old children learning to label map-like figures were used to investigate the feasibility of employing learner reports of information processing strategies employed during learning. Self report protocols were collected and analyzed and indicated that consistent with the Greeno (1970) model of paired-associate learning, reported discriminability of the stimulus term and the reported degree of integrative coding of both the stimulus and response terms were related to learner efficiency. In the second experiment verbal instructions were highly effective in establishing the most effective strategies uniformly among learners regardless of other individual differences.

Introspective Reports as a Function of Anxiety Level and Task Difficulty in Concept Acquisition

RICHARD C. BOUTWELL and HARVEY B. BLACK, Brigham Young University

The effects of self ratings of accuracy of response in non-feedback learning and anxiety level were investigated. Using a complex concept task involving the identification of RX_2 crystals following an illustrated definition of negative and positive instances, it was found that while low anxiety *Ss* tended to consistently over estimate performance, they correctly estimated higher performance on easier tasks as compared to harder tasks. However, high anxiety *Ss* were much more conservative in estimating performance, particularly on the easy task. The predictive validity of performance was found to be a function of both anxiety level and task difficulty.

MATHEMATICAL LEARNING I

The Relative Effectiveness of Two Different Instructional Sequences Designed to Teach the Addition and Subtraction Algorithms

CLYDE A. WILES, THOMAS A. ROMBERG and JAMES M. MOSER, University of Wisconsin

Two sequences of activities were developed to provide instruction on the algorithms for addition and subtraction of two-digit numbers. In the integrated sequence (I) the mechanics of "carrying" and "borrowing" were treated as a single process "regrouping." In the sequential treatment (S) the addition algorithm was developed before the subtraction algorithm. Students of two second-grade classes were randomly reassigned to either group S or Group I. Profiles were generated by item sampling. Group means were estimated for addition, subtraction and total performance every three days. Also, on the eighteenth day all children were administered a 20 item test.

All comparisons favored group S.

Interaction Effects Between Selected Cognitive Abilities and Instructional Treatment in Algebra: An ATI Study

LELAND F. WEBB, California State College, Bakersfield

An experiment was conducted to determine the existence of an Aptitude Treatment Interaction (ATI) involving spatial visualization and general reasoning and two programmed instruction treatments in quadratic inequalities emphasizing either spatial or symbolic reasoning. Using regression techniques, both treatments were equally effective. However, no evidence was presented to support the ATI hypothesis for either criterion (transfer test, time to criterion). As this study was a refinement of a study conducted by Carry (1967), comparisons of results between the studies were made. In general, the results of the two studies are not compatible, indicating that caution in generalizing results is necessary.

Spatial and Modality Effects in Simple Mathematical Computation

JOHN DEICHMANN and IAN D. BEATTIE, Southern Illinois University

This study explored the effects of visual (vertical and horizontal) and oral presentation modes upon simple mathematical computations (addition, subtraction, and multiplication). Seventy-two undergraduate education majors were employed as subjects. The placement of the process sign (left, middle, right) and whether a one or two digit number appeared first in the mathematical sentence was manipulated. The results demonstrated significant differences for modality, type of computation, sign and two-digit placement. Further, it appears that for the oral presentation, the process sign placed last is superior to the first position.

An Investigation of the Variables of Bloom's Mastery Learning Model for Teaching Mathematics

KENNETH COLLINS and GRAYSON H. WHEATLEY, Purdue University

The study investigated Bloom's mastery learning model for teaching secondary school mathematics. It utilized three variables: specification of objectives, diagnostic-progress (d-p) tests, and alternate resources for learning. Classes using either the objectives or d-p tests did significantly better on the posttest than a control class using none of the variables. Classes using objectives and d-p tests with alternate resources also performed significantly better than a control class. Thus a mastery learning model can significantly increase student achievement. The combined use of objectives, d-p tests, and alternate resources can further increase student mastery.

Error Trends in Solving Number Sentences Relating to Workbook Format Across First and Second Grades

IAN BEATTIE and JOHN DEICHMANN, Southern Illinois University

The effects of presentation, place holder and illustration upon one year's work of 132 first and second grade children in solving number sentences was measured by rate and type of error produced. An attempt was made to identify error trends over operation and grades relative to presentations methods. Results appear to demonstrate that presentation (vertical or horizontal), place holder (left, middle, right) and whether illustration are present or not, do have differential effects both on error rate, type, and that these effects are not constant across grade levels.

MATHEMATICAL LEARNING II

The Child's Introduction to Mathematics: A Transfer Model Based in Measurement

R. KEITH VAN WAGENEN AND RONALD D. ZELLNER, Arizona State University

Mathematics learning was introduced to kindergarten children by operations of linear measurement. Arbitrary units of measure were used to teach the child "unit of measure" as a power, addition and subtraction by the rule $n \pm 1$, and conservation of quantity. All instructional exercises were based in measurement and this common context for various concepts was intended to provide a transfer base for successive new concepts. Both an arithmetic concepts test of 61 items and the *Concept Assessment Kit—Conservation,* administered on entering and leaving, gave evidence of significant gains in the treated sample but not in a control sample.

Inductive and Deductive Learning Styles in Mathematics

JANE DONNELLY GAWRONSKI, University of Minnesota

Programmed materials were developed to determine if eighth grade subjects exhibited inductive and deductive learning styles in mathematics. Subjects above the median on the posttest following a concept taught inductively and below the median on the posttest following a concept taught deductively were classified as Inductive Learners. Subjects above the median on the posttest following a concept taught deductively and below the median on the posttest following a concept taught inductively were classified as Deductive Learners. 32 Deductive and 22 Inductive Learners were identified and administered an Inductive program and a Deductive program. No significant differences were detected on the posttests.

Role-Play and Characterization as Techniques for Teaching Primary Level Number Concepts

BERNADETTE M. ANTKOVIAK, Harrisburg Area Community College; HUGH F. McKEEGAN, Bucknell University

The object of this study was to assess how two variables in children's play, characterization and role-playing, affect learning performance in a cognitively oriented task—the learning of basic number combinations. Subjects were 40 kindergarten children randomly assigned to one of four treatments. The treatments involved role-playing and non-role-playing with either personification (characterization) of the number combinations as concepts or common animals. For immediate acquisition a significant interaction ($p < .05$) between role-play and form of concept was found. Retention results showed a significant treatment effect ($p < .05$). An explanation of the findings based on information theory is offered.

Discovery Learning versus Expository Learning: New Insight into an Old Controversy

BARBARA NELSON and DOROTHY FRAYER, Wisconsin Research and Development Center for Cognitive Learning

Four geometry concepts were presented to 228 seventh grade *Ss* through lessons written in either a discovery mode or an expository mode. *Ss* studied the lessons independently on four consecutive days. One-third of the *Ss* received a test immediately after completion of the lessons, one-third 1 day after and one-third 21 days after. The expository group showed superior immediate acquisition. There was no difference between groups on retention. Expository *Ss* required only 30% as much time to complete lessons as discovery *Ss*. Thus, the results of this study suggest that the expository method is more efficient.

Verbalizing Method Influence on Short-Term Retention of Discovered Generalizations

LARRY SOWDER, Northern Illinois University

Do the short-term retention effects of five methods of verbalizing discovered generalizations differ? Fifty college subjects individually discovered generalizations (as judged by consecutive correct responses) of six sorting or numerical tasks. Verbalization occurred after each discovery. After ten minutes a retention test of items amenable to the generalizations was administered. ANOVAs of test scores indicated no significant differences for the effects of the five methods, of modes of verbalizing (oral, written), or of sources of verbalizing (subject, external source).

MATHEMATICAL LEARNING III

The Effects of Selected Experiences on the Ability of EMR Children to Conserve and Use the Transitive Property of Three Matching Relations: A Feasibility Study

THOMAS J. COONEY, University of Georgia; DOUGLAS T. OWENS, University of British Columbia

The purpose of this study was to investigate the effects of training 12 EMR children ranging in age from (12; 8) to (15; 6) to conserve and use the transitive property on the relations *same number as, more than* and *fewer than.* Tests and instructional materials were designed. The binomial test indicated a significant increase in the number of students who could conserve and use transitivity from pretest to posttest ($p < .01$, $p < .02$) and from pretest to retention test ($p < .01$, $p < .04$). Evidence is provided that helps characterize the cognitive development of older EMR children and suggests possible curriculum materials that may be meaningfully utilized.

An Investigation in the Learning of Selected Parts of a Boolean Algebra by Five and Six-Year-Old Children

DAVID C. JOHNSON, University of Northern Michigan

A treatment on classification and relations was administered to forty five- and six-year-old children with forty children serving as controls. Direct achievement tests and transfer tests were administered after treatment. The transfer tests included measures on transitivity of the relations, class inclusion, and matrix items. The achievement tests consisted of measures on connectives, relational terminology, and intersecting rings. IQ and age were classificational variables. Effects due to treatment and IQ only were significant ($p < .01$) for transfer and achievement measures. Results of univariate ANOVA's showed no treatment effect for the class inclusion subtest.

Student-Generated, Textbook, and Pictorial Presentations of Mathematical Problems

GERALD KULM, JOAN LEWIS, ISSA OMARI and HAROLD COOK, Teachers College, Columbia University

Ten mathematical problems were presented to 116 ninth graders in one of five treatment versions: Student, Textbook, Pictorial, Student with Picture, and Textbook with Picture. Treatment by IQ analyses of variance produced statistically significant interactions between treatment and IQ only for the easiest problems when correct method and presence of a sketch were the criteria. The Pictorial version was superior for medium and high IQ groups when the criterion was presence of a sketch; the Student and Textbook versions were superior for the low IQ group on easy problems when the criterion was the correct method.

An Investigation in the Learning of Relational Properties by Kindergarten Children

LESLIE P. STEFFE and RUSSELL L. CAREY, University of Georgia

A sample of 48 kindergarten children were partitioned into two treatment groups where each treatment was designed using two relational categories; matching relations and length relations. Treatment was not significant (sign test) on tests of conservation of length relations, conservation of matching relations, transitivity, and asymmetry. The McNemar test of significance of changes was significant ($p < .01$) for the 48 children in the case of conservation of matching relations, conservation of length relation, and transitivity. No evidence was present indicating that conservation of length relations precedes conservation of matching relations.

Conservation and Achievement-Test Performance Among Fifth-Graders

VIRGINIA M. SILLIPHANT and DAVID L. COX, Rutgers University

The relationship between conservation and achievement was investigated by testing forty-eight fifth-graders on Piaget tasks of conservation and Stanford Achievement Tests of Word Meaning and Arithmetic Concepts. Thirty-five were classified as clearly concrete or formal. In comparison to those on the concrete level, those on the formal level of thought: (1) earned higher total scores on both tests (STAT); (2) answered specific items differently; (3) chose fewer wrong alternatives; and (4) were not significantly different in intelligence and sex. Development of achievement-test scoring keys, instruction and curricula within level of thought is suggested to maximize performance.

MICRO-TEACHING

Modification of the Frequency of Student-Initiated Higher-Order Questions through Microteaching and a Token Economy

MYRA J. SADKER, University of Massachusetts

The purpose of this investigation was to develop student skill in higher-order questioning (evaluation, comparison, cause and effect, problem-solving, and divergent questions). Four students were trained in higher-order questioning through an adapted microteaching procedure. After microteaching training, a token economy was established in the subjects' social studies class. Points were used to reinforce higher-order questions, and these points were exchangeable for various toys and games. The results indicate that elementary students can be taught to ask higher-order questions through microteaching and that this skill can be maintained through instatement of a token economy.

The Use of Microteaching Techniques to Train Student-Teachers in Stimulating Learners' Questions

LYA KREMER, Haifa, Israel; ARYE PERLBERG, Technion, Israel Institute of Technology

This paper deals with the use of microteaching techniques to train student-teachers in stimulating learners' questions. Research was carried out at the Gordon Teachers Training College, Haifa, Israel. A rating scale, including teaching patterns stimulating learners' questions, was prepared from the existing literature and the analysis of pilot micro-lessons. Twenty student-teachers taught four micro-lessons each to seventh grade pupils, ten of them were supervised as a group, the others individually. The results show that microteaching helped student-teachers acquire behavior stimulating learners' questions, and that group supervision was most effective to this end.

Effect of Supervisory Mode and Teacher Anxiety on Teacher Performance During Microteaching

WILLIAM D. JOHNSON, University of Illinois, Urbana-Champaign; SALLY F. PANCRAZIO, Illinois State University

Examination of a microteaching training effect in terms of teacher anxiety where the treatment is a supervisory conference was made for 52 social studies student teachers. Supervision mode was classified as indirect or direct using a modified Flanders IA. Teacher anxiety was assessed by the Davis Anxiety Scale; *Ss* were classified as either high or low anxious. Criterion assessing teacher performance was Factor B, Teacher Performance Appraisal Scale. Data were analyzed using ANOVA. The results indicated a main effect significance, at .01 level, for anxiety. The more highly anxious teacher had significantly better performance on the criterion. No supervisory effect was reported favoring a direct or indirect mode.

Feedback Condition and Type of Teaching Skill in Micro-Teaching

SUZANNE L. HISCOX and ADRIAN P. VAN MONDFRANS, Brigham Young University

Audio tape (AT) and audio-video tape (VT) feedback were compared in teaching verbal and a combination of verbal and non-verbal skills in microteaching. Subjects were undergraduate educational psychology students. They participated in two microteaching cycles of teach—feedback—reteach. Feedback consisted of a supervisor conference based on student ratings and either an AT or VT playback of the lesson. Analyses of covariance on student ratings of the teach and reteach sessions showed significant differences in favor of audio tape for verbal skills and no significant differences for combination skills. It appears audio tape is as effective as video tape in microteaching.

Stability of Behavioral Change—One Year after Precision Micro-Teaching

MARJORIE A. BOECK, Duke University

The study was designed to determine whether students whose classroom behavior changed by applying "precision teaching" strategies in micro-teaching maintained these behaviors during student teaching. College juniors taught to categorize and graph their own questioning behavior as "low-level" and "high-level" showed marked increases in rates of high level questioning and pupil talk. Rates of teacher talk decreased. Audiotapes made during student teaching indicated that experimental subjects had maintained or increased their rate of high-level questioning. Rates of pupil and teacher talk were also maintained at post-treatment levels. Control subjects showed no change from baseline performance.

MINICOURSE EVALUATION

The Minicourse as a Method for Training Teachers to Stimulate Divergent Thinking

EDWENNA R. WERNER, GLORIA Y. GOLDEN and STEPHEN R. MILLS, Far West Laboratory for Educational Research and Development

Research objectives were to evaluate the effectiveness of *Minicourse 20: Divergent Thinking* in training inservice teachers in grades 1 through 12 to use brainstorming and other techniques to stimulate divergent thinking in students and to teach students to evaluate responses using criteria. The relative effectiveness of audio and video feedback in microteaching was compared. The TTCT and analysis of brainstorming responses were used to determine whether the students increased in fluency, flexibility, and originality. Results indicate that teachers acquire many of the course skills with either audio or video feedback. Analysis of student results will be reported.

Evaluation of Minicourse 14, "A Discussion Approach to Controversial Issues"

MORRIS K. LAI, MEREDITH D. GALL, RACHEL ANN ELDER and RITA WEATHERSBY, Far West Laboratory for Educational Research and Development

A field test was conducted to evaluate Minicourse 14, "A Discussion Approach to Controversial Issues", an auto-instructional package for both teachers and students, developed by the Far West Laboratory for Educational Research and Development. Discussions 25 minutes in length were tape-recorded in 64 classes. Both teachers and students who took the course improved in their use of discussion techniques as compared with a control group. Student interaction doubled for the treatment group. All teachers who took the course indicated that it would be a worthwhile contribution to the current curriculum.

Effectiveness of a Minicourse on Teaching Decoding Skills in Reading

DAWN SKAILAND, Far West Laboratory for Educational Research and Development

Data are reported from the Main Field Test of a Minicourse on teaching reading (decoding) skills. Purposes of the test were to measure teacher behavioral changes and effects of reteach treatments. Comparison of pre- and post-course videotaped lessons revealed a shift toward research-based teaching strategies presented in the course. A similar shift away from negative behaviors was also reported. Two-thirds of the teachers comparing the course with other inservice courses rated it better than others; the other third felt it was on a par with others. Results show the course to be effective in improving reading (decoding) instructional methods.

Effects of Minicourse 2 on Teacher Skill in Developing Oral Language of Farm Migrant Children

BEATRICE A. WARD, Far West Laboratory for Educational Research and Development

Objectives were to identify which of four language development teaching behaviors were used by teachers and to evaluate effects of training in use of behaviors on teachers and pupils. Training included viewing models and microteaching. A sub-group also conducted daily 20-minute in-class lessons. At end of training, trained teachers differed significantly from control teachers in three of four skills. Pupils in daily-lesson group differed significantly in gains in use of descriptive and action words. Results indicate course is effective for teachers and pupils. Daily in-class application of skills increases both teacher and pupil performance.

Comparison of Instructional Media in a Minicourse on Higher Cognitive Questioning

MEREDITH D. GALL, BARBARA DUNNING and HENRY BANKS, Far West Laboratory for Educational Research and Development; JOHN GALASSI, West Virginia University

Research objectives were to evaluate a training program on higher cognitive questioning and to compare the effectiveness of two instructional media. Teachers in the video treatment viewed instructional videotapes, read a handbook, and did microteaching. The handbook treatment was identical, except that teachers read transcripts of the videotapes. The two treatment groups made significantly greater gains than control teachers in use of higher cognitive questions and elicitation of long student answers. Ninety percent of the teachers rated the course favorably. Results indicate the course is effective and that written materials are as effective as videotape presentation for training certain skills.

MOTIVATION

Development of a Motivational Needs Inventory

JANICE SMITH, Broward County Schools

The specific purpose of this study was to develop an instrument, the *Motivational Needs Inventory* (MNI), to identify students as achievement or affiliation motivated in order to improve school performance by providing verbal reinforcement appropriate to students' motive patterns. Factor analysis of ten teachers' ratings of a heterogeneous sample of 195 junior high students on the MNI yielded a five factor oblique solution of one achievement factor and four affiliation factors with high factor loadings for most items. Correlations of sub-scales of the two motivation dimensions with reading achievement confirmed the hypothesized relationship of achievement motivation and school success.

Praise and Group Competition as Incentives

KATHLEEN SENIOR and JERE E. BROPHY, University of Texas, Austin

The relative effectiveness of praise and group competition as motivating incentives affecting task persistence in young children was investigated. As predicted, competition was relatively more effective with second-graders than with kindergarten children, with boys than with girls, and with dull tasks than with interesting tasks. However, competition was generally less effective than praise, across all conditions. Competition may not be a very effective incentive for younger school children, in view of its possible negative side effects. Praise appears to be simpler and more effective.

Use of Access to a Recreation Activity Room to Motivate Academic Behavior in a Junior High Public School Classroom

DARREL E. BOSTOW and PHILIP R. RUNNELS, University of South Florida

Twenty-four culturally deprived junior high students in an inner-city public school served as subjects. An ABAB experimental design was used to evaluate whether achievement of daily science and mathematics behavioral objectives as well as on-task classroom behaviors could be increased by allowing the students to earn their way into a supervised activity room, contingent upon academic production. Results showed increased achievement of behavioral objectives by the class as a group when the reinforcement room was available. A time-sampling observation technique revealed that percent of time spent on-task also increased when the activity room was in operation.

High and Low Norms as Goals for Achievement

DEIRDRE HIATT and MARGARET M. CLIFFORD, University of Iowa

This study, conducted with 279 fifth graders, examined the effects of high norms (HN) and low norms (LN) used as goals in a vocabulary learning task. *Ss* in the LN condition had significantly higher retention scores; performance and interest were not significantly different. *Ss* whose ability level was closest to the norm given to their class performed better and expressed greater interest than *Ss* of comparable ability whose class was given a norm inappropriate to their ability level. Correlations between IQ, performance, and interest were higher in the HN condition.

Selected Community, School, Teacher, and Personal Factors Associated with Girls Electing to Take Advanced Academic Mathematics Courses in High School

ELIZABETH W. HAVEN, Educational Testing Service

This study explores ways to motivate girls who do well in mathematics to elect high school advanced mathematics courses. Data were collected on 40 variables from 1,840 girls and 63 mathematics supervisors in New Jersey public high schools, grouped according to the proportion of college going girls taking advanced mathematics. The girls were grouped on whether they took these courses, with a special category expecting to major in mathematically-related fields. Two discriminant functions accounted for most of the variance: rating of future usefulness of high school mathematics and interest in natural science as opposed to social studies.

OBSERVING CLASSROOM BEHAVIOR I

The Use of the Technion Diagnostic System (T.D.S.) and Microteaching Techniques in Modifying Teacher Behavior

ARYE PERLBERG, MIRIAM BAR-YAM, ARYE LEVEY, EHUD BAR-ON, RACHEL LEVIN, DALIA PINKAS, ARYE ETROG, JAEL NOAM, SHLOMO INBAR and CHAIM STAROBINETZ, Technion, Israel Institute of Technology

Sixty science and engineering student-teachers taught, over two semesters, eight micro lessons each. These were videotaped and analyzed by independent raters, according to a diagnostic instrument, T.D.S., for analyzing microteaching lessons. The instrument was derived from a mapping sentence of the instructional process, based on Guttman's facet theory. The supervision of students was geared to a "diagnostic" card obtained by means of computer analysis of video tapes. The treatment was effective in modifying behavior from teacher-centered, imparting knowledge and verbal activities, to pupil-centered, analytic thinking and nonverbal activities.

Sociometric Effects on Small Classroom Groups using Curricula Identified as Process-Oriented

RUTH S. NICKSE and RICHARD E. RIPPLE, Cornell University

Small classroom work groups from fifth and sixth grades participated in a three-week, student-directed, process-oriented social studies curricula. Sociometric measures were used to rank students in the classroom before and after the intensive collaboration among students. Attention was focused on the interaction between high and low socially accepted students as determined by their total sociometric scores. Significant differences were found that indicate a desegregation of rank effects within the classroom following small group work. Sociometric effects on the quality and amount of task-directed behavior and attitudes are also discussed as they affect classroom climate and cohesiveness.

Self Confrontation Counseling of Prospective Teachers: A Review of the Literature and Some Prescriptions

HARRY P. BAKER and FRANCES F. FULLER, Research and Development Center for Teacher Education, University of Texas at Austin

Is behavior change achieved by procedures different from those commonly used when teachers see video tapes of their teaching? Convergences suggest the use of unambiguous, credible feedback which is overtly and covertly accepted by the teacher; video taping of good performances rather than weak ones; selection of strong teachers with concerns related to the specific performance; discrepancies between expectations and performance which are moderate rather than small or large; and the required presence of a non-evaluative counselor in a permissive situation focusing on behaviors which are remedial rather than those which are resistant to change.

The Effect upon Verbal Interaction Data of the Medium Employed in the Codification Process

JOHN V. LONG, University of Rhode Island

This study examined: 1) The effect of differing modes of data collection and quantification (Live observation, audiotape, videotape, typescript) upon verbal interaction data; 2) If a media effect did exist whether the effect was more pronounced with a complex *vs.* a simple system. The Flanders 10 and 22 category systems were used to observe sixteen teachers from two elementary schools. Data generated under the four medium forms were analyzed using 4 x 4 Latin square repeated measures ANOVA. Results indicated that for specific verbal behaviors the medium employed in quantification did exert significant ($p < .025$) influence upon data obtained. Complexity hypotheses were not supported.

A Multi-Variate Analysis of Non-Verbal Interaction Between Teachers and Students: The Measurement of Meaning of Visuo-Gestural Channel Expressions

JOSEPH GERALD TERESA, University of Michigan; JOHN BRUCE FRANCIS, State University of New York, Buffalo

The present study sought to determine whether in an educational setting, teachers and students could identify visuo-gestural expressions by assigning affective meaning to individual emotional expressions. The analysis indicates that: 1) Three response clusters became apparent. 2) Teachers' mean scores were higher than those of the students, interpreting the overall meaning for each emotional expression. 3) The independent variables of sex and IQ, when analyzed in a multi-variate manner, failed to account for the variation in the students' ability to interpret emotional expressions. 4) The differences between schools interpreted and the differences among grade levels did account for a significant proportion of the variance.

OBSERVING CLASSROOM BEHAVIOR II

Predicting Social Studies Teacher Behavior

C. KENNETH MURRAY and HUGH J. TREANOR, West Virginia University

This investigation sought to examine the Teaching Situation Reaction Test (TSRT) as a predictor of teacher verbal and cognitive classroom behavior patterns. Thirty social studies teachers comprised the sample for this study which represented the upper and lower quartiles of a population of 60 teachers who responded to the TSRT. The dependent variables were verbal and cognitive classroom behaviors (measured by systematic observation techniques). A U Test was employed to test the differences between the ranks of the two groups of teachers. The data suggest that the TSRT has potential for predicting classroom behavior related to current developments in social studies instruction.

Use of Systematic Classroom Observation to Validate a Measurement of Teacher Beliefs About Teaching

GORDON D. LAWRENCE, University of Florida

Systematic classroom observation involving four observation systems (Reciprocal Category System, Teacher Practices Observation Record, Florida Taxonomy of Cognitive Behavior and Florida Climate and Control System) was used to validate a paper and pencil instrument. The latter was designed to measure teacher concepts about what constitutes good teaching practices in middle schools. From 320 instrument respondents 40 teachers were selected for observation. Correlations were found between 81 items and the various categories of the observation systems. In effect, the teacher attitudes represented in the responses to the 81 items were shown to have counterparts in observable behavior patterns in the classroom.

A Comparison of Observed Teaching Behavior of Oral Language Program Trained and Conventionally Trained Preservice Reading Teachers

DAVID R. KNIEFEL, North Carolina State University

An observational study employing the *Spaulding Teacher Activity Rating Scale* and the *Motor Behavior Description Categories* (developed by the researcher) was conducted to objectively describe and compare teaching behaviors exhibited by two groups of preservice reading teachers who were involved in different experiential training modes. Video taped test teaching situations were observed and the resultant behavior profiles were subjected to multivariate profile analysis. The results indicated that teachers trained with the Oral Language Program exhibited consistent behavior patterns between teaching situations while the conventionally trained teachers were significantly inconsistent on the social behavior management dimension of behavior.

Behavioral Expression of Teacher Attitudes

THOMAS L. GOOD, University of Missouri, Columbia; JERE E. BROPHY, University of Texas, Austin

In a replication and extension of work by Silberman (1969), differential teacher behavior toward different students was studied in relation to the attitudes teachers held toward these students. Using data on dyadic teacher-child interactions collected with the Brophy-Good system, contrasting patterns were noted in the ways teachers interacted with students toward whom they felt attachment, concern, indifference, or rejection. Four distinct patterns were observed. The data generally confirmed Silberman's earlier findings. Methodological differences which may explain the discrepancies which did occur are discussed, along with suggestions for related research.

Educators' Non-Verbal Interactions in a Laboratory Setting

EVAN R. POWELL and VIRGINIA C. DENNIS, University of Georgia

A laboratory experiment was conducted with 28 Black and white, male and female Educators in dyadic interaction with a B/W, M/F stranger of fixed location, position, and gaze. Race and sex of stranger influenced Educator-set interpersonal distance, gaze, and bodily orientation in a one-minute encounter as hypothesized. If many school personnel do vary these interpersonal intimacy dimensions unconsciously, (possibly following cultural norms), they should be made aware of these unintentional messages that may be perceived as racially or sexually discriminatory by recipients such as other staff, parents, and students.

PIAGETIAN TASKS

The Development of a Group Film Test of Certain Piagetian Conservations

GRAYSON H. WHEATLEY, Purdue University

The purpose of this study was to determine the feasibility of using a film to assess the Piagetian conservations. Two parallel tests were used, an individual manipulative (IMT) and a group film test (GFT). The subjects were 148 first-grade and 450 second-grade *Ss*. A subsample of the first-grade *Ss* received both the IMT and the GFT. The correlation of scores on the IMT and the GFT was .86. Other statistical comparisons were made. The results show that a GFT can be effectively used to assess conservation with the obvious implications for research and instruction.

Effects of Selected Experiences on the Classification and Seriation Abilities of Young Children

MARTIN L. JOHNSON, Rutgers University

A sample of eighty-one first and second grade children from two Atlanta elementary schools was randomly partitioned into experimental and control groups. The experimental children were given experiences in sorting and seriating linear objects. The main effects of treatment ($p < .01$) and grade ($p < .01$) were significant on a seriation test. Grade effect ($p < .05$) and school effect ($p < .05$) were significant on a conservation test, with school effect ($p < .05$) significant on a transitivity test. No relationships could be detected between classification performance and treatment, school, or grade; between classification and transitive ability using "same length as"; or between seriation and transitive ability using "shorter than" and "longer than."

The Modification of Age-Specific Expectations of Piaget's Theory of Development of Intentionality in Moral Judgments of Four- and Seven-Year-Old Children in Relation to Use of Puppets in a Social (Imitative) Learning Paradigm

JOHN M. REEVES, Heritage Health Center; WILLIAM B. MICHAEL, University of Southern California

An experimental investigation with forty children from ages four to seven who were exposed to a twenty-minute film involving puppets as models to act out Piaget-type stories and affording vicarious reinforcement from a six-year-old peer yielded results inconsistent with age-specific expectations of Piaget's theory regarding acquisition of moral judgments that requires a distinction between social acts of intentionality or accident. With respect to both an immediate and a two-week delayed posttest devised to reflect intentional choices or accidental consequences in moral judgments, significant differences suggested that the film aided children in comprehending intentionality irrespective of age.

The Object Sorting Task as a Predictor of Learning Outcomes

RICHARD BLOOM and ROBERT HESS, State University of New York, Stony Brook

One hundred fifth grade black and white children (*Ss*) were given the Object Sorting Task (OST) as a means of assessing divergent and convergent thinking. The *Ss* were also given five associative and conceptual learning tasks. Data were also obtained on achievement and I.Q. test scores. Correlational analysis indicated that the white sample showed a substantial number of interrelationships between the OST and I.Q. indexes, as predictors, and various learning measures. Relatively few such relationships were observed for the black sample. These results suggest the possibility of difference in the organization of basic learning parameters for white versus black children.

Piagetian Operations and Field Independence as Factors in Children's Problem Solving Performance

CAROLYN L. SAARNI, New York University

The investigation studied Piagetian developmental level and Witkin's field independence construct as predictors of young adolescents' problem solving performance. Field independence was nested within Piagetian level in a multivariate analysis of variance, which yielded a significant main effect for Piagetian level on problem solving performance; however, the nested factor field independence was nonsignificant. Sex differences were also analyzed: no significant sex differences were found in Piagetian level, but significant sex differences were found in field independence (Rod and Frame test). The formal operational girls were also significantly more field dependent than their concrete operational peers.

PROBLEM SOLVING: MATHEMATICS

The Relation Between the Development of Certain Conservation and Measurement Concepts

THOMAS P. CARPENTER, Boston University

One hundred and twenty-nine *Ss* in grades 1–2 were individually tested on 13 items designed to investigate the relationship between certain conservation and measurement concepts and to determine the role of equivalence and nonequivalence relations in conservation and measurement problems. Contrary to Piaget's conclusions, *Ss* in the earliest stages of development did not rely primarily on perceptual judgments. Distracting numerical cues led to the same number of incorrect responses as did visual cues. Correct numerical cues led to significantly ($p < .01$) more correct responses than correct visual cues. No significant differences due to different combinations of equivalence and nonequivalence relations were found.

Some Factors Associated with Pupils' Achievement When Solving Selected Types of Simple Open Sentences

J. FRED WEAVER, The University of Wisconsin, Madison

An Inventory was developed to investigate young pupils' achievement when solving simple open sentences (derived from basic number facts) which reflected selected mathematical characteristics. Significant main effects and numerous significant interactions were observed for the following factors: grade (1, 2, 3), sentence form as determined by the symmetric property of equality ($a \circ b = c$, $c = a \circ b$), operation specified (+, -), placeholder position (a, b, c), and existence/nonexistence of a whole-number solution. Findings suggest that if open number sentences are included in school programs for young children, relevant mathematical factors should be considered more carefully.

Some Factors Associated with Children's Solving Performance on Four Types of Mathematical Open Sentences

DOUGLAS A. GROUWS, University of Missouri, Columbia

In this study the relationship between children's performance in solving certain open sentences and three factors (Open Sentence Type, Number Size, Context) associated with these open sentences was investigated. Sixteen open sentence solving tasks were individually presented to each of thirty-two randomly selected third grade children. Multivariate analysis of variance on the number of correct solutions on linear combinations of solving tasks indicated that there were significant differences in children's solving performance on the four types of open sentences and on the two levels of number size. There also was a significant Open Sentence Type X Number Size interaction.

Use of Matrix Sampling Procedures to Assess Achievement in Solving Open Addition and Subtraction Sentences

MARGARIETE A. MONTAGUE, University of Wyoming

This study investigated the feasibility of concurrently and randomly sampling examinees and items in order to estimate group achievement. Seven 32-item tests reflecting a 640-item universe of simple open sentences were used such that item selection (random, systematic) and assignment (random, systematic) of items (four, eight, sixteen) to forms were varied. Twenty-four second or third grade populations were randomly selected. Analysis of variance was used to examine the data.

Nonsignificant differences were observed with respect to item selection, item assignment, and number of items per form. Results support the appropriateness of the procedure for estimating group achievement.

PROBLEMS IN READING

An Evaluation of Auditory Perception Training and Supplemental Reading Instruction for Children with Auditory Perception Disorders: A Two Year Follow Up

FERN C. WILLIAMS, THOMAS OAKLAND and WILLIAM HARMER, University of Texas

Previous research shows lower SES children to be deficient in auditory perception abilities and reading achievement and suggests that deficits in auditory abilities may attenuate development of reading skills. In 1968-69 two strategies were implemented in an attempt to increase reading achievement of lower SES first graders: (1) auditory perception training; (2) supplemental reading instruction which does not rely heavily upon auditory perception abilities. Two year follow-up data on the children indicates auditory perception training alone does not increase reading achievement. Reading instruction designed to circumvent perceptual deficits may prove effective and deserves further research.

Differences in Learnability of Content and Function Words Presented in Isolation and Oral Context When Taught to High and Low Socio-Economic Level Subjects

ROBERT DAVIS CHESTER, University of Wisconsin

The purpose of this investigation was to gather empirical data concerning the learnability of content and function words taught in treatments of isolation and oral context to groups of prereading first grade pupils in high and low socio-economic levels. One hundred twelve subjects were tested through a paired-associate task and the data were analyzed in a 2 x 2 x 2 analysis of covariance. Of the main effects—word class, treatment, and socio-economic level—only the latter two were significant at the .01 level. No interactions were significant. Results indicate that socio-economic level and context may be important factors in initial learning.

Application of Group Contingent Reinforcement with Slow Learning, Culturally Deprived Children

JOHN F. JACOBS, Southern Illinois University

Rural, culturally deprived, slow learning children (N = 130) were randomly assigned to one of five experimental conditions: Control, random reward, individual reward, group reward, and combined group and individual reward with teachers randomly assigned on a daily basis as a control for teaching skill and teacher-class interaction. Gain scores on five subtests of the Stanford Achievement Test Battery (using ANOVA and t-tests) indicate group reward conditions achieved more than twice the historic rate of gain or the gain under control conditions. Data further suggest that group contingencies are approximately twice as powerful as individual.

Reaction Time in Learning-Disability and Normal Children

CARL J. SPRING and JOHN B. HOPKINS, University of California, Davis

Poor readers and normal readers were matched on age (7-12) and IQ (94-130). Two letters were presented simultaneously. *Ss* responded by pressing one switch if the letters were the same, and another if different. Reaction time was longer for poor readers. In addition, reaction times increased during testing, and decreased after a rest, more for poor than normal readers. Correlations between initial reaction times and changes were significantly different for poor and normal readers. Results are interpreted as support for a theory that certain learning-disability children respond to laboratory tasks with sub-optimal levels of arousal.

Language Factors in Judging Educational Potential

STANLEY F. WANAT, International Reading Association

Inquiry into language factors was used in judging educational potential. First, current knowledge base in this area of research was analyzed. Sub-areas include: differences between "school" English and other varieties, psychological barriers encountered by biculturals, and assumptions about language varieties underlying instructional strategies. Second thrust was interviewing a sample of educators about the kinds of linguistic criteria employed in making such judgments. The third thrust is an experimental study of linguistic factors actually affecting these judgments. Categories of linguistic factors being field tested include: paralinguistic, phonological, grammatical, and lexical. Interactions between perceived student and teacher characteristics are of particular concern.

PROSE LEARNING I

Acquisition and Long-Term Recall of Text Surrounding Complex Relational Sentences

PERSIS T. STURGES, Chico State College; LAWRENCE T. FRASE, Bell Laboratories

Adults learned a text (with unlimited or restricted reading time) in which three forms of critical sentences were embedded: simple factual, or complex inclusion and temporal content. All *Ss* had three acquisition trials, each followed by free recall and, seven days later: free recall; prompted recall of facts from the text; and two prompted recall tests on critical sentences. Recall of material surrounding different kinds of content did not differ. However, the critical sentences did differ on all measures, with inclusion best and temporal worst; and retention of inclusion relations showed no loss over seven days.

Effect of Complex Text Sentences upon Recall for Surrounding Information

LAWRENCE T. FRASE, Bell Laboratories

Can complex relations in a text monopolize processing or storage space, thus inhibiting the acquisition of subsequent information? Adults learned a text (under paced or unpaced conditions) in which complex logical and temporal relations were embedded. After reading, *Ss* answered a prompted recall test covering material that immediately preceded and followed simple factual, or complex logical and temporal content. Under unpaced conditions, recall of the material preceding or following the different kinds of content did not differ. Under paced conditions, recall for material following the logical and temporal relations was depressed. Two other studies failed to replicate the latter finding.

Anxiety, Instructional Pacing, and the Comprehension of Fact and Inference in Learning from Discourse

ANTHONY L. TRUOG, Wisconsin State University, Whitewater; FRANK H. FARLEY, Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin

Literal and inferential comprehension of a 2,000 word passage of 10 approximately equal pages was studied as a function of presentation rate (15 *vs.* 30 secs. per page) and anxiety. General anxiety (Eysenck

Personality Inventory) had no main effect on either literal or inferential performance, but the slower rate significantly facilitated literal performance. A significant interaction of anxiety and presentation rate was obtained for literal performance only. High anxiety was associated with poor performance at the slow rate but superior performance at the fast rate relative to performance characteristic of low anxiety.

The Relationship of Cognitive Flexibility to Learning of Prose Material Differentially Classified According to the Taxonomy of Educational Objectives: Cognitive Domain

REED G. WILLIAMS, Southern Illinois University

The study investigated the nature of the relationship between cognitive flexibility and the ability to learn prose material differing in cognitive demand. It was hypothesized that cognitively flexible *S*s would perform significantly better on the comprehension, application and analysis levels than would subjects characterized as less flexible. Flexible and non-flexible individuals would not differ in performance on knowledge level tasks. Fifty-four college youth were administered a learning task incorporating subtasks from the first four levels of the taxonomy and the PM scale, a measure of cognitive flexibility. Multiple linear regression analysis supports the research hypothesis ($p < .05$).

Raters' Predictions of the Recallability of Expository Prose as Related to Actual Recall

RONALD E. JOHNSON, Purdue University

Various samples of college students attempted reproductions of textual prose immediately after learning or after a seven-day retention interval. An independent group of raters made predictions regarding the linguistic subunits which would be most frequently remembered. The data provided strong evidence that learners possess knowledge as to the textual subunits which are likely to be learned and remembered. Additional analyses showed that judgments of predicted recall are closely related to judgments of meaningfulness and also to judgments of structural importance.

PROSE LEARNING II

The Direction of the Effect of Questions in Prose Material

BARRY McGAW and ARDEN D. GROTELUESCHEN, University of Illinois

The study ascertained the difference in functions and loci of shaping and review in facilitating learning from prose material contained in *The Sea Around Us*. The initial effect of inserted questions appeared to be forward, shaping *S*s inspection behaviors to bring *S*s to attend to details of the text relevant for answering the questions. Once the initial shaping had occurred the inserted questions appeared instead to exert a backward effect, facilitating performance by forcing review of material just read. This facilitation through review was greatest for criterion items dealing with the substance of the text tested by the inserted question.

Differential Response to Question Pacing in Learning from Prose

MARY LOU KORAN and JOHN J. KORAN, JR., University of Florida

In an experiment designed to explore the interaction of individual differences with question pacing in learning from written materials, 92 *S*s were administered aptitude tests representing verbal and memory abilities, then randomly assigned to treatments in which questions were placed after every one or four pages, or omitted from a prose passage. Posttest analysis of relevant and incidental retention showed that relevant retention increased with question frequency, however no between-group differences were found in incidental retention. Multiple regression analysis of Aptitude x Treatment interactions showed that aptitude measures interacted significantly with treatment conditions for incidental retention.

Output Interference in Prose Learning

WILLIAM McKENDREE BOYD, Memorial University of Newfoundland

Ninety-six college *S*s were given a passage with 5 or 10 questions after every five paragraphs, or no questions (controls) and either a short or long criterion test, consisting of intentional questions, identical to those in the paragraphs, and incidental questions, unrelated to the interspersed questions. The long test produced a lower percentage of correct items than the short test. Intentional scores were all above controls. For *S*s given the short test, incidental scores were above the control scores—a general facilitative effect. On the long test they fell below the controls.

Effects of Response Requirement Type, Placement, and Category Upon Attention Patterns Influencing Prose Learning

EDYS S. QUELLMALZ, Southwest Regional Laboratory for Educational Research and Development

To identify techniques which direct attention to text relevant to prose learning, the effects of response requirements embedded within a thirty-six page text which varied by Type (Questions or Objectives), Place (Before or After text segments) and Category (identification of names or applications of principles) were investigated. For pages one to eighteen, response requirements were of one category (names), for the second half, of a different category (applications). Significant results were found for Relevant test scores compared to Non-Relevant and Incidental scores, for Relevant items when text questions occurred after text, and for higher Incidental items after the category switch.

An Investigation of the Effects of Type, Location, and Distribution of Orienting Stimuli on the Acquisition and Retention of Meaningful Prose Materials

JAMES P. PAPAY and BOBBY R. BROWN, Florida State University

The effectiveness of behavioral objectives (BO), questions (QU), and advanced organizers (AO) at pre- and postlocation with massed and distributed presentation modes was investigated by presenting 317 *S*s with a 3000-word prose passage. Multivariate ANOVA and ANACOVA on immediate retention and delayed retention scores disclosed that the orienting stimuli were instructionally effective. Moreover, QU best facilitated learning with the distributed postlocation; whereas, AO favored the massed prelocation. The BO was most effective at prelocation, but the optimal distribution and type recall remained inconclusive. Overall, AO optimized comprehension, prelocated QU maximized factual recognition, while postlocated QU facilitated comprehension.

PROSE LEARNING III

The Influence of Imagery on the Recall of Sentences in Prose

H. PARKER BLOUNT and RONALD E. JOHNSON, Purdue University

The purpose of this study was to examine the influence of imagery on the recall of prose. A study was made of the influence of differing imagery level nouns as the subject and object of the preposition of a sentence. The sentences were written so that concrete-concrete, concrete-abstract, abstract-concrete, and abstract-abstract subject-object noun pairs were interchangeable. The concrete-concrete subject and object noun sentences were recalled significantly better than the concrete-abstract, and the abstract-abstract sentences. The concrete-abstract and the abstract-concrete sentences were recalled significantly better than the abstract-abstract sentences.

Experimental Manipulation of Reading Strategies

GEORGE W. McCONKIE, KEITH RAYNER and STEVEN J. WILSON, Cornell University

College undergraduates read a series of passages each followed by the same type of questions. Groups receiving different questions adopted different reading strategies, picking up different types of information. Factual and higher-order strategies were very similar. Payoff conditions influenced reading speed. For students reading for factual and higher-order information, reading speed affected the amount of incidental information gained, but had no effect on the types of information for which they were specifically reading. This does not hold for all strategies, however.

Psycholinguistic and Reading Abilities of Educable Mentally Retarded Readers

SHIRLEY B. MERLIN, Madison College; M. S. TSENG, West Virginia University

Measures of psycholinguistic and reading abilities of 25 EMR good readers and 25 EMR poor readers were compared with ANCOVA. The good reader group showed significantly higher abilities in auditory association, auditory reception, grammatic closure, manual expression, visual closure, visual sequential memory, automatic level of organization, representational level of organization, auditory communication, visual communication, and psycholinguistic age; and in average reading, word recognition, oral reading, silent reading, and listening comprehension. Psycholinguistic age ($r = .68$, $p < .001$) proved to be a more powerful predictor of average reading than mental age ($r = .33$, $p < .05$) and IQ did not correlate with average reading.

The Effects of Imagery and Rote Repetition Instructions on the Ability to Reason from Logical and Scrambled Sequences

SANDRA G. KOSER, Cornell University; GERALD L. NATKIN, Louisville Public Schools

This study investigated the use of imagery as a memonic aid. Seventy-two *Ss* read five scrambled or five logically sequenced paragraphs under imagery or rote instructions. All *Ss* were tested on their ability to draw inferences from the passages. Regardless of instructions, logical sequence resulted in superior inference making. There was also an instructions x sequence x trial blocks interaction. With scrambled texts and imagery instructions inference making improved with practice; with scrambled texts and rote instructions, it deteriorated. These results supported the hypothesis that imagery and logical sequence can function to reorganize text, thereby making it easier to remember.

RADICAL ACCELERATION OF EXCEPTIONALLY BRIGHT STUDENTS

From Eighth Grade to Selective College in One Jump: Two Case Studies in Radical Acceleration

DANIEL P. KEATING and JULIAN C. STANLEY, Johns Hopkins University

We review literature on gifted children as it applies to the decision to accelerate or not to accelerate exceptionally bright students who are also high achievers in science and mathematics. Problems and possibilities are illustrated by case studies of two 13-year-old boys who went directly from the eighth grade of public schools to the freshman class of a selective university and succeeded well. Our review of previous studies indicates that, in the present educational structure, considerable acceleration is the best alternative for some students. Better methods remain to be devised. Considerations leading to them will be discussed.

READING: COMPREHENSION

Children's Verbal Learning and Comprehension in the Aural and Visual Modes

DAVID V. WILLIAMS, Ithaca College; JOANNA P. WILLIAMS, University of Pennsylvania

Paired associates, sentences and prose passages were compared in auditory and visual presentation to fourth and sixth graders. Immediate and delayed measures of memory/comprehension were employed. The materials represented classroom task paradigms as well as those in the experimental literature. The auditory mode was significantly superior in the prose-delayed condition. A second study demonstrated the effects of "availability" of stimulus materials across modes pointing to the need for a clearer understanding of variables associated with mode. Additional studies are proposed.

Effect of Prompting and Relevant Reading upon Children's Comprehension and Recall of Logical Content

ERNEST D. WASHINGTON, University of Massachusetts; LAWRENCE T. FRASE, Bell Telephone Laboratories

Studies attempted to improve children's ability to draw inferences by emphasizing text structure. In one study, 32 fourth graders answered rote or inferential questions from text. Half were prompted to pay attention to the terms that mediated connections between sentences. Prompting did not affect performance on rote questions, but prompted *Ss* scored 30% higher on inferential questions. In another study, 72 children from Grades 3-5 read varying numbers of passages exemplifying a particular logical structure, and they answered rote or inferential adjunct questions. Amount of relevant reading and type of adjunct question did not affect the learning of two transfer passages.

What is Recalled After Hearing a Passage?

BONNIE J. F. MEYER and GEORGE W. McCONKIE, Cornell University

In order to determine what aspects of information from prose are available for recall after one presentation of a passage, and what aspects are learned with additional presentations, two passages were divided into idea units. These units were placed in a logical, hierarchical structure for each passage, and scores were assigned to the idea units on the basis of their position in the structure. Effects of the logical structure were seen in the kinds of idea units which were remembered, the stability of these units in consecutive recalls, and the tendency for clustering of idea units on this basis.

Comprehension of Telegraphic Prose

CLESSEN J. MARTIN and MARY ANNE HERNDON, Texas A&M University

The purpose of this study was to assess the effects of telegraphic prose upon the comprehension of oral and written messages. Telegraphic prose is based upon the assumption that written and spoken language contains many words and word sequences which are unnecessary for the efficient communication of information. A total of 160 *Ss* were tested in two experiments in which the *Ss* were assigned to four treatment groups: Visual-Traditional, Visual-Telegraphic, Auditory-Traditional, and Auditory-Telegraphic. Although there was a significant difference in comprehension between telegraphic and traditional messages (12% less comprehension for telegraphic messages), 60% less time was spent reading telegraphic passages.

Implication of Racial Identification of Story Characters and Influence on Affect and Comprehension

ROBERT L. AARON, University of Georgia

Black and white fourth, fifth, and sixth graders read stories imputing to two principal characters clear protagonist and antogonist roles, and identifying them racially as black and white. Black subjects show affect to the protagonist when he is identified racially, but whites seem to rate more on descriptive characteristics of the role read about, rather than on race. For both groups, ratings of the initially negative white role went to a more positive score as the antagonist image changed to protagonist in the last half of the story. The affectivity of a story is clearly dominated by the role description employed, especially for black pupils.

READING: DECODING

A Psycholinguistic Comparison of Oral Reading Errors of Good, Average, and Poor Readers in Third Grade

JAMES E. COOMBER, Concordia College

The objective of the study was to find differences in the decoding strategies of good, average, and poor readers in the third grade. A linguistic analysis of oral reading errors was the method used. Phonetic-graphemic evaluations of errors revealed differences between the three ability groups in use of grapheme-phoneme correspondences. Syntactic measures revealed no differences between groups in proficiency in using syntactic context. Most of the errors of all three groups conformed to syntactic context. These results suggest that the poor reader has a mastery of sentence structure but lacks adequate phonic skills and sight vocabulary.

Assessment of Subskills Related to Novel Word Decoding

ROBERT E. RUDEGEAIR and R. JAMES MINEO, Southwest Regional Laboratory for Educational Research and Development

A study was conducted to assess the ability of phonics-trained kindergarten *Ss* to pronounce unfamiliar words. In addition to the unfamiliar word test, four tasks designed to reflect a hierarchy of decoding subskills were administered to the same *Ss* to determine which subskills low-ability decoders have failed to acquire. Results showed that while high-ability decoders can perform all tasks with ease, middle and low-ability decoders exhibit poorer performance as task complexity increases. Data on performance with regard to different units of word analysis is also reported.

Novel Word Decoding in Kindergarteners as a Function of Decoding Strategy and Segmentation-Blending Training Form

JOHN KOEHLER, JR., Southwest Regional Laboratory for Educational Research and Development

An investigation of how segmentation-blending (SB) training form affects the application of decoding strategy (WD) to novel word decoding was conducted on kindergarteners. Combinations of 2 WD strategies and 6 SB forms were applied to 12 groups of 6 children. The word decoding data indicated that the strategy involving C-VC and CC-VC elements for CVC and CCVC words transferred best with sounding out training, whereas this SB form was no better than one involving both blending and element identification for the strategy having CV-C and C-CVC elements. Implications of these and other results for phonics reading instruction are examined.

Learning and Transfer Effects of Variations in Word-Decoding Instruction

MASAHITO OKADA, HOWARD J. SULLIVAN and EDWARD HIRSCH, Southwest Regional Laboratory for Educational Research and Development

This study investigated the effects of three different word-decoding instructional procedures in grade 1: a single-letter (SL) approach, a letter-combination (LC) approach, and a procedure in which children receive several weeks' instruction in the SL method and then switch to the LC approach. There were no significant differences between the three groups in achievement on the 32-item posttest measuring the ability to read words encountered during instruction and the ability to sound out and read new words, but each treatment group scored significantly higher on the posttest than did a control group receiving regular first-grade reading instruction.

Effects of Teaching i.t.a. to Inner-city Black Children in Kindergarten and First Grade

WAI-CHING HO and FREDRICK E. MENZ, Educational Research Council of America; CHARLES F. EISZLER, Central Michigan University

This study investigated two major problems: (1) Can inner-city black children learn to read in kindergarten using i.t.a.? (2) Does i.t.a. help inner-city black children improve proficiency in reading and other language skills? Results indicate that inner-city black children can learn to read in kindergarten through the i.t.a. medium. By the end of kindergarten, the i.t.a. group performed significantly better than the T.O. group on Auditory and Visual Discrimination, Sound-Symbol Association, Word Recognition, and Meaning. The i.t.a. group also surpassed the T.O. group in reading skills, writing and oral language at the end of grade one.

REASONING AND LOGICAL THINKING

Some Developmental Trends in Inferential Thinking Among Elementary School Children

GARY R. McKENZIE, University of Texas, Austin

In individual interviews, *Ss* who were randomly selected from one elementary school (N = 133) were shown photographs of activity in an unfamiliar society and asked four pairs of questions, the first calling for interpretation and the second calling for evidence supporting the interpretation. Responses were classified by accuracy of interpretation and type of support offered. Frequency-of-use-scores on five types of interpretations and six types of justifications were compared between ages by ANOV. Older *Ss* interpret photos more accurately than younger *Ss*, and use photographic evidence to support inferences more than young *Ss*. Young *Ss* frequently ignore photographic evidence.

Children's Inductive Reasoning Performance on Picture Stimuli

WILLIAM F. COX, JR. and HAROLD J. FLETCHER, Florida State University

Eighty subjects 4, 6, 8, and 10 years of age inductively identified partially uncovered silhouettes of 3 simple pictures. Subjects removed as few as possible covering pieces, according to their own strategies, to correctly name the pictures. Performance generally improved with increased age on the two dependent measures, inductively inferring the identity of incomplete pictures and efficiently removing pieces on the silhouettes. A plateau in performance existed on the inductive inference measure between ages 6 and 8. Results indicate that young children reason inductively on nonwritten tasks judged appropriate for studying more complex forms of induction.

Development of a Thinking and Reasoning Component for Preschool Children

HARRIS W. STERN and JANICE FREEMAN, Southwest Educational Development Laboratory

This session will be devoted to a presentation of various aspects of the development of a curriculum component to teach higher level thinking skills and problem solving to preschool children from low income Chicano and Black families. This component is a new addition to the Early Childhood Curriculum of the Southwest Educational Development Laboratory. The report will discuss the theoretical framework used to generate the curriculum lessons; it will describe the component itself and some of the lessons included in it; and it will present data from various experimental and field studies carried out in conjunction with the development effort.

A Study of Logical Thinking

RONALD E. LESHER, Bucks County Intermediate Unit

Two aspects of logical thinking were singled out for study: syncretistic understanding and logical thinking as measured by the Logic Test (O'Brien and Shapiro, 1968). Analysis showed significant gap between seventh grade students and fourth through sixth grade students on both aspects of logical thinking. A trend analysis showed a leveling off or plateauing in sixth grade. Care should probably be taken in what types of logical thinking are actually demanded of elementary grade students.

Training and Transfer of Problem Solving

MICHAEL J. LOUPE, University of Minnesota

A two-part experiment was completed to test the amenability of problem solving techniques to short term training and to test the degree which these techniques transferred to a different situation and were manifest in terms of improved problem solving. Twenty *S*s were trained in a 3 hour program to look for problems, define the problem, generate explanatory hypotheses, define testing plans, search for information according to the plan and redefine the problem in light of new information. When compared to a comparable control, trained *S*s showed transfer in some behaviors. Possible implications were explored.

REINFORCEMENT AND FEEDBACK I

Increasing Rate and Accuracy of Academic Performance Through the Application of Naturally Available Reinforcers

BETH SULZER, SHARON HUNT and ANDY LOVING, Southern Illinois University

To determine if the activities of most school programs could be contingently utilized to increase accurate academic performance rates, a special class was organized with nine elementary students identified as having motivational problems. Each was individually assigned to work on two subject areas. Following a baseline period, students were required to purchase access to activities like crafts and games, with points for correct work. Points were earned in one, later in both subject matter areas. Using a multiple baseline design, results demonstrated that making access to naturally available reinforcers contingent upon correct items increased both academic and classroom behavioral performance.

Generalization of Reinforced Behaviors in a Game Situation

GAIL HAY MARCHASE, Johns Hopkins University

The generalization of reinforced behaviors operationally defined as competitive or cooperative was studied using twenty-eight kindergarten children in a 2 x 2 design. Praise and tokens were employed in a game to reinforce the competitive behavior of winning or the cooperative behavior of working together. Two generalization measures were taken. Analysis of variance revealed that the plurality of helping responses given by Cooperative treatment subjects reached significance only in the measure more similar to the treatment situation, supporting a generalization gradiant interpretation. There were no significant sex differences. Results support the suggestion that behavior modifiers consider concomitant changes in behaviors other than target behaviors.

Teaching Mothers to Use Behavior Modification Techniques with their Mentally Retarded Children

BARBARA A. DOTY, North Central College

The purpose of this study was to determine whether mothers could be trained to use behavior modification procedures to shape the behavior of their own retarded children. The mothers of 8 trainable children were instructed in the use of modification procedures in a laboratory situation, after which they used similar procedures at home with their children over a 6-month period. Eight other mother-child pairs served as a control group. The results suggested that a relatively brief and inexpensive training program is effective in teaching mothers to shape multiple behaviors in their own retarded children.

Group Therapy Readiness Using Operant Techniques With Mental Retardates

MARC J. ACKERMAN, University of Georgia

Following 4 weeks of unsuccessful conventional therapy, five trainable mentally retarded males were placed in a behavior modification "group-therapy-readiness" program (BMP). Immediate gratification, short range delayed gratification and long range delayed gratification were used. Teachers were encouraged to continue the BMP in their classrooms. Desirable behavior was exhibited significantly more often ($p < .005$) during the BMP than before. There was no significant difference between the BMP sessions and follow-up sessions. Extinction was avoided through the use of varied reinforcement schedules and cooperation of the teachers. Operant techniques successfully readied mental retardates for a group therapy setting.

The Effect of Teacher Verbal Mediation Training Upon Student Ability to Describe Consequences of Behavior

RALPH O. BLACKWOOD and THOMAS H. MAXWELL, The University of Akron; LARRY L. LORTON, Akron Public Schools

An extension of operant conditioning to verbal mediating self-control behavior, "Mediation Training," was investigated to determine if it facilitates student verbalization of behavior consequences. *S*s were 50 elementary students chosen by 11 teachers as their "best behaved" and 50 chosen as their "worst behaved" students. These were divided into "Mediation Trained" and control groups. A 2 x 2 ANOVA of pre- and post-treatment questionnaire results showed more verbalizations of behavior consequences by "Mediation Trained" *S*s ($p < .05$). There was no difference between the "best" and "worst" behaved groups. Results indicate "Mediation Training" improves self-control and extends operant methods.

REINFORCEMENT AND FEEDBACK II

The Effects of Verbal Reward and Punishment on Subject-Matter Growth of Culturally Disadvantaged First Grade Children

JOAN K. HONEYCUTT, Ohio State University; ROBERT S. SOAR, University of Florida

This study examined the relationship between teacher verbal behaviors and subject-matter growth with first-grade, Negro and Caucasian children participating in Project Follow-Through. Teacher verbal behaviors were assessed with the Reciprocal Category System. Pretest-posttest administration of the Metropolitan Readiness Tests was the basis for determination of adjusted gain scores which were utilized as the dependent variable. Analyses revealed no significant relationships between teacher verbal behaviors and subject-matter growth. A significant finding was that Negro children in racially integrated classrooms gained more on Subtest 1, Word Meaning. Interpretation and implications will be discussed.

Factors Influencing "Learning Difficulty" in Programmed Instruction

OWEN J. HORNUNG and ROBERT L. MORASKY, State University of New York, Plattsburg

Based on the assumption that learning difficulty in programmed instruction is related to completion time and program response error-rates, an attempt was made to demonstrate that deletion of knowledge of results (KR) and the 1st Example (E) in the Rule-Example-Pos./Neg. Example teaching frame paradigm would increase learning difficulty. Four groups of 31 *Ss* each completed programs with the following designs: E & KR, E & No KR, KR & No E, and No E & No KR. Program response rates and work rates favored the inclusion of examples. KR influenced completion time when examples were deleted. It was concluded that examples in teaching frames were a factor influencing learning difficulty.

Sustained Attention and Response Rate as a Function of Task Difficulty and Feedback Arrangements

GLENN E. SNELBECKER, THOMAS HOLOHAN, STEPHEN WOLK and WILLIAM FULLARD, Temple University

Two experiments focused on optimal conditions for presenting information in education and rehabilitation. Sustained attention (persistent responding on *previously* correct keys), response rate and response patterns were studied as a function of feedback arrangements and task difficulty. Data support the notion that providing frequent feedback in a *complex* task may momentarily enhance *Ss*' performance but may cause greater diminution of attention to cue stimuli than when either less frequent or no feedback is provided. Results are discussed with reference to theoretical models of attention and extrapolation of experimental single operant research findings to complex practical situations.

Delay of Feedback and its Effect on the Retention of Three Types of Computer-Assisted Mathematics Instruction

LORRAINE R. GAY, Florida State University

To investigate the effect of feedback delay interval for three types of mathematics instruction (definitions, algorithms and proofs), 80 undergraduates were assigned to 1 of 4 feedback conditions: 1) student received feedback immediately following a response; 2) feedback was received 30 seconds following a response; 3) feedback for all responses was received at the end of each instructional session; and 4) feedback for all responses was received 24 hours following each session. Delayed retention scores showed that a 30 second delay improved definition retention up to 12%, and that a 24 hour delay decreased proof retention up to 23%.

Cognition and Frustration in Delay of Gratification

MARY LOU SCHACK and DAVID J. MASSARI, Temple University

Sixty Black first-grade children were employed in a 2 x 3 design to investigate the effects of the cognitive variable of time and frustration level on self-imposed delay behavior. The factors were: (a) frustration level; presence or absence of both high and low valued rewards; and (b) time concept aid; timer plus instructions, timer minus instructions, no-timer control. Following ranking of rewards, subjects waited for their high valued reward or forfeited it for their low valued, but immediately available reward. The presence of rewards decreased waiting time, and the timer plus instructions condition increased waiting time, particularly in the high frustration condition.

RESEARCH ON STUDENT ATTITUDES

Differences in Value Patterns Among Sixth, Eighth, and Eleventh Grade Students

DAVID H. QUIST, Worcester State College

The present study explored the value patterns of 1,100 sixth, eighth, and eleventh grade students to determine what differences in value patterns were present among these three groups of students. The students were all given a specially designed value inventory based on the Traditional-Emergent concept of values hypothesized by Spindler (1955). Significant differences on seven value dimensions were found. Overall a significant decline in Traditional values was in evidence. The results of the study indicate the importance of values in the school setting.

What Instructors Learn from Students: Student and Faculty Ratings of Instruction

JOHN A. CENTRA, Educational Testing Service

The purpose of this study was to compare student ratings or reports on instruction with the teacher's own self-reports. Students and instructors responded to a 75-item "Student Instructional Report" which elicited both their descriptions and evaluations of classroom procedures. Differences between means for the two groups were significant for nine of the 75 items ($p < .01$), and on all of these nine items instructors rated or described their teaching more favorably than did their students. Correlations were *not significant* for 63 of the 75 items ($p < .01$), indicating that for those items instructors and students tended not to concur strongly in their ratings or descriptions of instruction.

Attitudes of Children Established by Classical Conditioning

FRED BARNABEI, WILLIAM H. CORMIER, and SCHUYLER W. HUCK, University of Tennessee

The purpose of this study was to examine attitudes of children established by classical conditioning. A posttest-only design was used with positive and negative word associations presented to the experimental group, and neutral word associations presented to the control group. Data were collected on all subjects from a semantic differential scale. Results of this study indicated that classical conditioning of attitudes occurred in the experimental group, and that this conditioning was effective without subject awareness. This study was important because it attempted to remove some of the ambiguity already present in studies dealing with classical conditioning of attitudes.

The Effects of Being a Tutor upon the Attitude of High and Low Ability Elementary Students Toward Their Total School Environment and Reading Ability

GRANT VON HARRISON, Brigham Young University; MARY JANE PIDD, Utah State Learning Disabilities Center

This study was designed to provide empirical data regarding the assumed benefits for students when they are utilized as tutors for younger children. High and low ability upper-grade elementary students were utilized as tutors for primary grade children. Both experimental groups were compared statistically with comparable control groups in terms of attitude toward the total school environment and reading ability. The low ability student tutors benefited much more from the experience than the high ability student tutors.

Student Attitudes Toward the Teacher as an Authority Figure

JOHN A. BURNS and PHILIP FRIEDMAN, Northwestern University

Two hundred secondary school students (100 black, 100 white) from grades 7 to 11 were randomly selected from 4 inner city high schools. A questionnaire was administered which measured the student's own attitude and perceptions of peer and parent attitudes toward teacher authority. Parents and peers responded to the same attitude questionnaire. Student attitude scores were regressed on race, parent attitude, peer attitude, student's I.Q., achievement and vocational interest. Race was the most significant variable, accounting for approximately 29% of the attitude score variance. While parent and peer attitude showed a small but significant relationship, age, achievement and vocational interest had little effect on the student's attitude score.

RETENTION

Pictures and Imagery Training as Relational Organizers in Children's Learning

FRED W. DANNER and ARTHUR M. TAYLOR, University of Minnesota

The effects of unitized pictorial relations and relational imagery training on the associative recall of elementary school children were investigated. From the recall data it was concluded that the poor performance of young children on associative memory tasks can be remediated by training in attending to and constructing relations.

An Examination of the Facilitative Effects of Objectives, Grades, and Knowledge of Results on Classroom Learning

GEORGE H. OLSON, Florida State University

The facilitative effects of behavioral objectives (BOs), knowledge of results (KOR), and the assignment of grades on various stages of text-based classroom instruction were investigated. Students assigned to different cells in a 2^3 factorial design received either explicit BOs or non-explicit BOs, KOR or no KOR, and grades for quiz performance or no grades for quiz performance. As measured by post-test performance, the eight groups were equivalent. In terms of *en route* quiz performance, however, students in the graded conditions were found to take longer to work through the lessons and to make fewer errors on lesson quizzes.

Word Frequency as a Discriminative Attribute of Memory

R. PAUL STRATTON and KENNETH A. JACOBUS, University of Kentucky

This study tested the hypothesis that word frequency functions as a discriminative, and not a retrieval, attribute of memory. The *S*s were instructed to recall a "common" or "uncommon" word to a two-letter cue (e.g., f____k). After the first and last two problems (of 16) a recognition test was given which consisted of all possible solutions. It was found that, although "uncommon" *S*s could think of uncommon words, the order of recall was predicted by memory strength. That is, knowledge of the frequency of the target word did not help bypass memory strength as a determiner of word availability.

The Effects of Verbal Instruction and Reinforcement on Concept Learning and Retention

RICHARD L. BEATTIE, Central Missouri State College; BILL F. ELSOM, Oklahoma State University; ROBERT S. MEANS, Westchester State College

The purpose of the present investigation was to determine if concept attainment and retention were influenced by verbal instruction and reinforcement. Forty *S*s were randomly assigned to one of four treatment groups: Partial Reinforcement–Verbal Instruction; Continuous Reinforcement–Verbal Instruction; Partial Reinforcement–No Verbal Instruction; Continuous Reinforcement–No Verbal Instruction. The results of a 2 x 2 A.O.V. were significant ($p < .01$) for both verbal instruction and continuous reinforcement which were superior in learning trials. Interaction effects were non-significant ($p > .05$). The results of a 2 x 2 A.O.V. were significant ($p < .01$) for both verbal instruction and continuous reinforcement which were inferior in retention trials. Interaction effects were not significant.

Retroactive Inhibition in Free Recall as a Function of List Organization

JANE PERLMUTTER and JAMES M. ROYER, University of Massachusetts

A two by three factoral design was used to investigate the effect of list organization on retroactive inhibition (RI) in free recall (FR). Categorized lists were used, with one independent variable involving the same (S), or different (D) categories in each list, or a control (C) which only studied one list. The other independent variable involved blocked (B), or random (R) presentation of the words. Significant RI was exhibited by S and D groups, with more RI in the S groups than in the D groups. No significant main effect was found between B and R groups.

SOCIO ECONOMIC AND ETHNIC FACTORS IN ACHIEVEMENT

Concept Formation and Locus of Control Among Advantaged and Disadvantaged Students

JUDITH S. GOLDEN, Marywood College

With increased structure in the teaching-learning situation, it was expected that fifth graders external in locus of control would demonstrate increased concept formation performance relative to internal locus of control students. A levels (LSES, MSES) by levels (internal, external control) by treatment (baseline, increased structure) by repeated measure (level of difficulty) design was used. Nonverbal and verbal measures of concept formation were obtained. Externals surpassed internals under increased structure. Internals performed better with less structure. Nonverbal and verbal concept formation SES differences were not found. No SES locus of control differences remained after screening for extreme age and achievement.

The Heritability of Jensen's Level I and II and Divergent Thinking

THOMAS R. PEZZULLO, University of Rhode Island; ERIC E. THORSEN and GEORGE F. MADAUS, Boston College

A heritability study employing 65 pairs of twins was conducted investigating the heritability of Jensen's Level I (operationalized using a modified "digit span" test), Jensen's Level II, or "g", the general intellective factor, (operationalized as the score on Raven's Progressive Matrices), and Divergent Thinking, (operationalized as scores on the Torrance Tests of Divergent Thinking). Null hypotheses concerning the heritability of Jensen's Level I and Level II were rejected (5%) while the Divergent Thinking hypotheses were not. The indices of heritability for Level I and II were .54 and .80, respectively, which indicate the proportion of concomitant variation between genotype and phenotype.

An Experimental Field Study of the Impact of Nonverbal Communication of Affect on Children from Two Socio-Economic Backgrounds

RUTH MIDDLEMAN, Temple University

Ninety fourth graders in an "inner city ghetto" school and ninety in a lower-middle class suburban school were randomly selected and assigned to three experimental treatment groups in each school. In each group a video-taped teacher instructed the students to perform three simple tasks. The verbal message was held constant while the nonverbal communication differed (positive, negative, neutral). Results indicated that productivity of the lower-middle class suburban subjects was not affected by differences in nonverbal communication style, while ghetto children were more productive ($p < .05$) on a drawing task under negative conditions. While ghetto children showed no affect-style preference, suburban preferred positive, negative, neutral respectively.

A Study of the Relationship of Global Self-Concept, Academic Self-Concept, and Academic Achievement Among Anglo and Mexican-American Sixth Grade Students

THOMAS H. LINTON, Region One Education Service Center

The purposes of the study were: (1) to determine if Anglo and Mexican-American sixth grade students differed significantly on measures of global self-concept and academic self-concept, and (2) to determine the relationship of academic achievement to global and academic self-concept. Data obtained from 159 Mexican-American and 173 Anglo sixth grade students indicated that the two groups did not differ significantly either on global or academic self-concept. In addition, academic self-concept was more consistently related to achievement than global self-concept for both Anglo and Mexican-American students.

Cross-Cultural Study on the Effect of Space on Teacher Controlling Behavior

GAIL PERRY and ROBERT C. HARDY, University of Maryland

This is a cross-cultural study using teachers in the Virgin Islands and Washington, D. C. concerning the effect of classroom space on teacher behavior. It is hypothesized that Head Start teachers in small classrooms will control children more than teachers in large rooms. Behavior of the twenty Virgin Island teachers in the largest and smallest Head Start classrooms was analyzed using an observation Control/Non-control Scale. An analysis of variance, used to analyze the data, supported the hypothesis that teachers in small classrooms were more controlling, employing more discipline, threats and restraints. This research has implications for facility planning and teacher guidance.

SPELLING

Student Ratings of Expected Performance in Spelling and Their Relation to Actual Performance under Several Assessment Conditions

KAREN K. BLOCK and NANCY B. PESKOWITZ, Learning Research and Development Center

Students judged a list of medium difficulty words via a numerical rating scale which reflected their expected spelling performance (Cannot (1); Maybe (2); Can (3)). Students heard the word and rated it; after rating all words, students spelled them with no feedback. After a short delay, they rated their spelling performance again either under similar conditions, or after reading their spellings. Judgments of expected performance were differential predictors of subsequent performance and might be used to select instructional treatments. Reading previous spellings improved the detection of incorrect spellings suggesting that reading and spelling should be treated as complementary tasks in the curriculum.

Alternative Uses of Phonemic Information in Spelling

DOROTHEA P. SIMON, HERBERT A. SIMON, Carnegie-Mellon University Learning Research and Development Center

The paper distinguishes several different ways in which phonemic information can be employed in spelling, examines some empirical data on the consequences of using these different information sources, formulates hypotheses about the underlying processes, and draws implications for the teaching (and learning) of spelling. A computer program is constructed to simulate spelling processes that use phonemic information. The performance of the program is analyzed, and its behavior compared and contrasted with the rule-table algorithm of Hanna, et al. The program is shown to give a plausible account of the causes for children's most common spelling errors.

The Effects of Word Segmentation Schemes on Spelling Acquisition and Retention

SHIRLEY A. TUCKER and KAREN K. BLOCK, Learning Research and Development Center; PATRICIA A. BUTLER, Southwest Regional Laboratory for Educational Research and Development

Students learned spelling words via three word segmentation schemes. Focal units (letter, pronounceable chunk, whole word) were either pronounced or not pronounced. Students learned two word types: words whose segments result in the common pronunciation (e.g., SPEC-TA-TOR) and words whose segments do not (e.g., WED-NES-DAY). Results showed the latter were more difficult. Teaching pronounceable chunks facilitated acquisition of both word types when segments were pronounced. Delayed and long term retention were low and unaffected by the experimental variables. The context for learning spelling should be broadened from phonological and orthographical dimensions to dimensions such as word meaning to enhance retention.

The Von Restorff Effect on the Number and Distribution of Spelling Errors

ALAINE F. JASS and WILLIAM B. GILLOOLY, Rutgers University

The use of the von Restorff or isolation-by-color effect to reduce spelling errors predicted by Hanna, Hanna, Hodges, and Rudorf (1966) was investigated by training 64 5th graders with 30 eight-letter words. These words were irregular with respect to phoneme-grapheme correspondences. Overall error reduction was the same for both the isolation/no isolation groups thereby agreeing with previous verbal learning studies that lists employing the isolation effect are not learned better than other lists. The distribution of errors across serial-letter positions, however, was significantly different, suggesting that attentional factors affect the serial position curve.

TEACHER BEHAVIOR

The Influence of Opinions of Professional Reference Groups on Decisions of Pre-Service Teachers

GEORGE W. BRIGHT, Northern Illinois University; L. RAY CARRY, The University of Texas, Austin

Two hypotheses were tested on the population of pre-service secondary school mathematics teachers: 1) Mathematicians and educators influence decisions of such teachers in projected classroom situations. 2) Mathematicians exert more influence than educators. Projected classroom situations were written, each requiring resolution and each accompanied by three plausible alternatives. The sample was split randomly into control and experimental groups. X^2 statistics showed support for Hypothesis One ($p < .001$). Kolmogorov-Smirnov statistics indicated significant influences of mathematicians at the .03 level and of educators at the .01 level. Wilcoxon signed-rank matched-pairs statistics indicated no significant differential effects.

The Effects of Pupils' Race, Class, Test Scores, and Classroom Behavior on the Academic Expectancies of Southern and Non-Southern White Teachers

BARBARA H. LONG, Goucher College; EDMUND H. HENDERSON, University of Virginia

One hundred and twenty white elementary teachers (half Southern, half not) rated 12 descriptions of children which varied in readiness scores (3 levels), activity (active, passive) and attention (high, low) as to their likelihood of learning to read in first grade. Four forms which varied as to race (black, white) and class (middle, low) of the child were used with each group. Analysis of variance (3 x 2 x 2 x 2 x 2 x 2) showed main effects for scores, activity, and attention and six significant interactions. Findings suggest that teachers' expectancies are affected by pupils' behavior as well as scores and that scores, race, and behavior interact with teachers' background.

Presentation Behavior Related to Success in Teaching

ROBERT H. PINNEY, Western Washington State College

This study was intended to identify correlates of successful teaching as might exist in the presentation behavior of pre-interns. Using twice-adjusted (student verbal/quantitative ability; difficulty of lesson) mean class achievement scores, 16 high-scoring and 16 low-scoring teachers were drawn from 56 Stanford social studies and English pre-interns. Four categories of presentation behavior, verbal, non-verbal, combinations, and interaction, yielded over 100 measures of behavior, coded via audiotape, videotape and manuscripts. Results indicate high-scoring teachers conveyed essential lesson points via frequent repetition, verbal statements of importance, and/or reinforcement of responses, often accompanied by various non-verbal behaviors.

Conceptual Level as a Determinant of Teacher Behavior and Attitudes in a Non-Structured Type Learning Activity

RICHARD C. OSWALD and FRANK BROADBENT, Syracuse University

Using the Conceptual System Theory as a theoretical rationale, this study yielded data which indicates that teacher conceptual level is a major determinant of teacher behavior and attitudes during a minimally-structured type learning activity. Evidence tends to support the conclusion that the low conceptual level teacher may re-structure a minimally-structured lesson in such a way that he can play the role of teacher as normatively defined by him; whereas the high conceptual level teacher tends to alter his behavior relative to the nature of the lesson employed.

Stability of Teacher Effectiveness

JERE E. BROPHY, University of Texas, Austin

Data are presented on second- and third-grade teachers' consistency (stability) in producing residualized gains in the Metropolitan Achievement Tests. Stability coefficients and data showing the percentages of teachers who meet various consistency criteria are given for: (a) boys' vs. girls' achievement; (b) achievement on the different subtests of the Metropolitan; (c) consistency across 3 years in effectiveness with each sex and for each Metropolitan subtest. The implications of these data for research and theory about effective teaching are discussed.

TEACHER PERCEPTIONS AND ATTITUDES I

Changing Teacher Attitudes Toward Human Relations Problems in Integrated Schools

LEN T. SPERRY, Marquette University

Some researchers consider it difficult to modify teacher attitudes concerning human relations problems because of the difficulty of dealing with both individual personalities and organizational roles. This paper reports the results of a pilot study in which the survey feedback method was employed in an urban elementary school to promote changes in the perceptions of white teachers toward their racially mixed students. After two months of the experimental treatment, the teachers in the experimental group reported significant changes in their perceptions and attitudes toward their students. The immediate implications of this research for integrated schooling are discussed.

A Study of Attitude Factors for Secondary School Teachers and Teacher Education Students

JOHN EDWARD McCLURE and ROBERT S. BARCIKOWSKI, Ohio University

The purpose of this study was to define teacher attitude factors for secondary teachers and teacher education students using an instrument made up primarily of attitude items which had been found to have high factor loadings in other studies and to assess the effects of male-female and teacher-undergarduate dichotomies on the stability of these factors. Using factor analysis techniques ten factors were defined and compared to factors found in other studies of teacher attitudes. Several of the factors defined in this study seem to have promise in the prediction of teaching success.

The Relationships Between Secondary School Teachers' Knowledge of and Attitude Toward Educational Research

BYRL G. SHORT, Penfield Central Schools; MICHAEL SZABO, Pennsylvania State University

This study was designed to assess the relationships among secondary school teachers': (1) knowledge of educational research terminology, and (2) attitude toward educational research. A knowledge of educational research test (SKERT) and semantic differential attitude test were constructed. Additional data were secured through a questionnaire. A sample of 204 secondary school teachers from western New York State voluntarily completed the self-report data forms. Scores on the SKERT were significantly related to: (1) subject matter taught, (2) recency of course work in statistics, measurement, and design, and (3) prior research experience; and were independent of attitude toward educational research.

Selected Attitudes and Perceptions of Beginning Teachers as Related to Their Teaching Situations

P. TERRETT TEAGUE, JR., Stephens College

The purpose of the study was to assess characteristics of beginning teachers' first year teaching situations and the effects upon these teachers across placements. Situations were delimited by size and type of community and racial composition of teachers' classes. Scales were used to elicit responses of University of Georgia education graduates regarding perceptions of situational characteristics, teacher-situation relationships, preparation for teaching, and attitudes toward education. Perceptions and attitudes of beginning teachers were significantly differentiated on several variables, including more favorable perceptions of adjustment and adequacy of preparation being indicated by teachers in suburban settings and with predominantly white classes.

Teachers' Views of Particular Students and Their Behavior in the Classroom

BARBARA B. JENKINS, University of Chicago

The ways a teacher views her students were studied at three levels of generality: (a) her over-all attitudes toward particular students, (b) her generalized expectations, and (c) her perceptions of specific classroom behavior. The subjects were four attitude recipients and their teacher from ten suburban, intermediate level classrooms. The teachers were interviewed; the students' behavior was observed; and the teachers' perceptions were assessed by questionnaire. Two student behaviors, three teacher perceptions, and two generalized expectations separately were major determiners of the teachers' attitudes of attachment, rejection, concern, and indifference. The students' behaviors were only minor determiners of teachers' perceptions and expectations.

TEACHER PERCEPTIONS AND ATTITUDES II

Student-Directed Learning in an Undergraduate Course in Educational Psychology

MELVIN L. SILBERMAN and JEROME S. ALLENDER, Temple University

The purpose of this research was to evaluate a student-directed approach to a typical undergraduate course in educational psychology. Five experimental sections utilized student-directed, inquiry learning procedures and six control sections employed a more traditional, teacher-directed approach. Data was obtained concerning shifts in students' evaluative attitude toward the course as well as their conceptions of teaching. The experimental group had a significantly more positive evaluation of the course and reported greater impact from it than did control students. In contrast to the control group, they also underwent a significant change in their conceptions of teaching during the semester.

Effects of Teacher Set

EDMUND T. EMMER, University of Texas; THOMAS L. GOOD, University of Missouri; GENEVA HANNAH PILGRIM, University of Texas

The effects of teacher set toward achievement or toward attitudes upon pupil achievement and attitudes were studied. Three groups of student teachers experimentally received, respectively, a set toward pupil achievement, toward pupil attitudes, or no set. The natural set of both student and teachers and their cooperating teachers was also assessed. Measures obtained in each of 58 classrooms included pre and post achievement tests, an attitude questionnaire, observations of teacher and pupil behavior, and ratings of student teacher journals. The student teachers' natural set was significantly related to pupil attitudes. No treatment effect was found for the induced sets.

Teacher Non-Verbal Activity

BARBARA M. GRANT, William Paterson College of New Jersey

This descriptive research study had as its major objective the development of a category system through which the teacher's physical motions in relation to his verbal actions could be analyzed with a high degree of reliability. The performances of five elementary teachers at the College Demonstration School were recorded on video tape. Narrative typescripts of both verbal and non-verbal "teacher motions" were made for representative, random samplings of lesson segments. Using the analysis system that emerged in this study, two teams of coders analyzed these data. Coefficients of agreement between teams ran consistently high. Hypotheses, concerning non-verbal activity, were projected.

Teacher Survival Behaviors within the School Organization

ANN S. FERREN

The purpose of the study was to determine how teachers adapt to the demands of the organization in which they teach. Data were gathered through semi-structured interviews and observation in two secondary schools. The major findings included: All teachers utilized adaptive behaviors in their daily work habits. The behaviors coincided in classification with those reported in industrial research. The behaviors included disassociating oneself from the teaching role, limiting personal involvement, and goal displacement. If conflict and adapting are inevitable, behaviors which promote equilibrium with the least detriment to the organization, the teacher, and the students should be sought.

The Persistence of First Impressions in Course and Instructor Evaluations

R. BARKER BAUSELL and A. J. MAGOON, University of Delaware

A course evaluation instrument was administered at the beginning and at the end of the course to 357 *S*s enrolled in 20 undergraduate and graduate courses. Ratings changed notably on six items, and individual changes were in part predictable from expected grade changes. Pre-post correlations, however, for each of the 29 items (N = 20) yielded a median value of .67 as compared to a corrected split-half reliability of .78 for the posttest. Apparently, experiences with an instructor and course intervening between the beginning and end of a course have only a slight influence on student evaluation of the instructor.

TEACHER-PUPIL INTERACTION

Behavioral Responsiveness of Teachers in Verbal Interactions with Students

PHILIP C. McKNIGHT, University of Kansas

Two training procedures for promoting teacher responsiveness to student comments in small classroom groups were investigated. Responsiveness was defined as the ability to listen carefully to what students say and to respond in an appropriate cognitive and affective manner. Results indicated that a procedure emphasizing listening training improves teachers' abilities to summarize and retain the content of verbal communications as measured by a post-training test. "Response appropriateness" training did not have a significant effect on a post-training test, although a control group showed least improvement. The effects of the training procedures on post-training discussions were not generally significant.

An Observational Investigation of Instruction and Behavior in an Informal British Infant School

RICHARD M. BRANDT, University of Virginia

The purpose of this investigation was to gather a comprehensive assortment of objective descriptive data on an informal British infant school in an effort to understand rather precisely the nature of instructional processes and pupil experiences. The principal method of obtaining data was observation and the making of PROSE records on a stratified random sample of young children in two classrooms. Instructional processes were characterized by a high rate of teacher and pupil behavior, considerable pupil involvement in a wide range of self-selected activities, reinforcement of certain teacher expectancies, and frequent questioning of pupils about their activities and experiences.

The Effects of an In-Service Training Program for Elementary Teachers Upon Selected Teacher-Pupil Perceptions and Relationships

DAVID P. GABEHART, RONALD IANNONE, JOHN L. CARLINE, and C. KENNETH MURRAY, West Virginia University

The purpose of this study was to determine the effects of an intensive in-service training program designed to develop a positive social-emotional classroom climate upon selected teacher-pupil perceptions and relationships. Thirty teachers were given pre and post tests on Barrett-Lennard's Relationship Inventory and the Dogmatism Scale; four hundred and seventy five pupils were given the Relationship Inventory, Tuckman's SPOT'S, and Coppersmith's Self-Esteem Inventory. A t-test was applied to test the differences between the experimental and control group of teachers and their pupils. The results indicate that the objectives of the in-service program were met.

Freedom and Fairness: A Comparison of Male and Female Teachers in Elementary Classrooms

HENRIETTE M. LAHADERNE and SARALE COHEN, Institute for Development of Educational Activities, Inc.

The proposition that male teachers create more flexible classroom settings, grade more fairly, and have greater success with boys than do women was explored through classroom observation, teacher interviews and ratings, and pupil questionnaires. The comparison of 14 male and 39 female elementary school teachers showed few differences in the classroom environment; moreover, these differences favored the women. There was no effect of teacher's sex on the ratings assigned to boys and girls. Pupils with female teachers had higher science achievement test scores, knew more about the school environment, and held a more positive attitude toward school than did pupils with male teachers.

Modification of the Verbal Behavior of Teachers: Its Impact on the Verbal Behavior of Pupils

ROBERT F. TARDIF, California Department of Education

Twelve teachers were randomly assigned to two equal groups. Six received specialized training for analyzing videotape recordings of their own in-class verbal behavior according to its potential impact on pupil thinking. Six received no training and they, and their classes, constituted the control condition. Both groups were videotaped equally often and the first and last tapes were used to generate data for the MANOVA hypothesis testing. The verbal behavior of both teachers and pupils was significantly different between groups due to treatment. Between groups pupil differences on selected critical thinking skills were not significant before or after treatment.

TEACHER RATINGS

Validity of Tests of the Cognitive Processes

I. LEON SMITH, Yeshiva University

Based on the assumptions of the *Taxonomy* and its definitions of the cognitive processes, it was hypothesized that performance on the first four levels favors students from a conventional educational environment, while tests of the upper two levels favor those from a more open climate. Male and female students from two classes at each of two grades from both environments were administered the Lorge-Thorndike Intelligence Test and a taxonomic test. Data were analyzed through multivariate analysis of co-variance procedures. Results support the hypotheses. Implications are discussed in relation to the cognitive processes and the goals of education.

Teacher Accountability and Pupil Achievement in Reading

HOWARD J. SULLIVAN, Arizona State University; FRED C. NIEDERMEYER, Southwest Regional Laboratory for Educational Research and Development

This year-long, 15-school study investigated the effect of teacher accountability on reading achievement of first-grade pupils. Four levels of accountability were defined as follows: (1) use of regular reading program only, (2) regular program plus instructional objectives, an assessment exercise, remedial exercises, and objectives-keyed pupil performance records for each unit, (3) condition 2 above plus either a pacing schedule or reporting of unit scores to the school principal, (4) condition 2 plus both pacing and reporting. A 4 x 3 L-test revealed a significant positive relationship ($p < .001$) between level of teacher accountability and end-of-year pupil achievement.

The Effectiveness of a Performance-Based Teacher Training Module on Planning and Presenting

JEFF A. PYATTE, University of West Florida

Small, efficient learning packages designed to teach specific information, skills or concepts are becoming a large part of instructional programs in teacher training institutions. Measuring the effectiveness of these packages is a difficult problem. Results of effectiveness studies on a performance-based module used with classes of inservice and preservice teachers are disclosed in this paper. The evaluation design employed is a Simple Single Criterion Evaluation Design used by the Navy in effectiveness studies of training materials in programmed format. A mean of correct responses of eighty percent indicated that the module was effective and students received the material enthusiastically.

Teacher Evaluation as a Function of Students' Sex and Achievement Level

M. Y. QUERESHI, Marquette University; FREDERICK W. WIDLAK, Purdue University

Sixty-seven male and 73 female undergraduates rated self, father, mother, and a male teacher on MARS. They also rated the teacher on a 17-item scale (RST) at the end of the course and took five teacher-made achievement tests during the semester. Students were divided into high and low achievement levels (AL), using the median as the cutoff. Two-way multivariate analysis of variance showed significant ($p \leqslant .0001$) differences in teacher ratings on MARS and RST factors between the sexes and between high and low AL *Ss* ($p < .05$). Also, a significant Sex X AL interaction ($p < .05$) was found for RST data.

The Relationship of Selected Student Characteristics to Components of Teacher/Course Evaluations among Freshman English Students at Kent State University

W. ROBERT KENNEDY, Kent State University

This study investigated the relationship of selected student variables and four evaluative components of a teacher/course evaluation instrument using as a sample 549 freshmen students enrolled in English 160 at Kent State University during Fall Quarter, 1970. Students' age, selected Omnibus Personality Inventory subscale scores, and American College Test scores were not correlated with their ratings on each of the evaluative components. Fall Quarter grade point average, "actual" and "actual versus expected" grade in the course were positively correlated with all component ratings. Sex and college membership were related to ratings on one or more of the evaluative scales.

TEACHER TRAINING I

Patterns and Styles in the Supervision of Teachers in Individual Conferences Following Classroom Observations

ESTHER THEODOR and ARYE PERLBERG, Technion, Israel Institute of Technology

Goldhammer's model for studying the content of supervisory conferences was the basis for a qualitative analysis of 25 conferences, held between five supervisors working in culturally deprived schools and five teachers who taught five micro-lessons, which were supervised independently by each of the five supervisors. Analysis of the taped conferences revealed that although many supervisory patterns were common to the supervisors, each had a unique style consisting of specific combinations of patterns. The participating teachers and fifteen other teachers, who listened to the taped conferences, were in substantial agreement ($r = .77$) on preferred and rejected patterns and styles of supervision.

Public School Experience and its Impact on Pre-Service Education Students

GOLAM MANNAN and LEWIS M. CIMINILLO, Indiana University, Northwest

The objective of the study was to explore the cognitive and attitudinal changes of sophomore and junior students taking their first course in education. The focus was on subject matter gain and attitudinal change. The students were divided into two groups, half receiving part of their schooling on site in the public schools; the other half in a conventional university setting. Pre and post tests were given. While no significant differences were found in knowledge gained in either group, the group assigned to the public schools exhibited considerable change in attitude.

The California Teacher Development Project for Individualized Instruction: Individualizing Inservice Education

W. WARREN KALLENBACH and DENNIS CARMICHAEL, San Jose State College

The California Teacher Development Project for Systems of Individualized Instruction is an ESEA Title III Project designed to facilitate teacher and administrator role transitions from group-paced to individualized instruction. Teachers in the Experimental Group ($N = 61$), when compared to a comparable Control Group, were determined to increase significantly ($p < .001$) in positive teaching behaviors following participation in a five-day individualized workshop on individualizing instruction. All teacher's classrooms were observed once before and twice following the workshop. Attitudes and knowledge were assessed for students of teachers in both groups. Results moderately favored students in non-Experimental Group classrooms.

The Effects of Training on Increased Use of and Correlation Between Higher Order Classroom and Test Questioning Behavior

JOHN L. DERHAMMER, Georgia State University, Columbus; WILLIAM H. CORMIER, The University of Tennessee

The controlled study investigated the effects of training, with and without feedback, on increasing teachers' higher order classroom and test questions and improving the correlation between these two kinds of questioning behavior. A Questions Analyzer was used to obtain the data from twelve elementary school teachers in Tennessee. Classroom and test questioning behavior were analyzed using analysis of variance and coefficient of correlations. Results indicated that training significantly increased the incidence of, and correlation between, higher order classroom and test questioning behavior in both trained groups. The findings emphasize the importance of training teachers in the use of higher order questions.

The Relationship Between Satisfaction and Performance in Student Teaching

BERNARD J. SHAPIRO, Boston University; PHYLLIS P. SHAPIRO, Emmanuel College

This study represents an exploration of the relationship between student teacher satisfaction with the classroom internship and the assessment of that internship by the master teacher. Using 50 teacher education seniors as subjects, it was found that the greatest satisfaction was being expressed by students toward the middle of the grade range while much lower satisfaction levels were characteristic of interns seen as either "outstanding" or "unsatisfactory" by their master teachers. However, item analyses revealed that although the general level of dissatisfaction of these two groups was the same, the underlying reasons for their discomfort were quite different.

TEACHER TRAINING II

Preaching and Practice in Teaching Educational Psychology: A Four-Year Study

CHARLES G. GALLOWAY, University of Victoria

The purpose of this study has been an attempt to individualize instruction within an introductory course of educational psychology. The material has been programmed so that through a learning-for-mastery approach ideas being "learned-about" are reflected in how the material is taught. Average student performance has increased each year. Over 90% of the students complete all the work required. Student evaluations have been consistently positive toward learning-for-mastery. Follow-up information over two years comparing the opinions of students now teaching who experienced the individualized approach and students who did not indicates relatively higher ratings for the transfer value of the individualized approach.

Incidental Learning of Curriculum Subject Matter in Educational Psychology Courses

EDWARD LEDERMAN, Eastern Michigan University

Students in an educational psychology course examined the test blueprint and objective items from an educational achievement test. The students saw the answers to the items but they were not explicitly told to learn them. These students scored higher on the items than a control group, but the point-biserial correlation between group membership and scores was not high. Only a small amount of incidental learning occurred, when a large amount would have been desirable.

Program Priorities in Teacher Education

CAROL KEHR TITTLE, City University of New York

The Committee on National Program Priorities in Teacher Education was formed to make recommendations to USOE-BEPD and Task Force '72 for program development. Committee members prepared plans, and abstracts were circulated to reviewers (70 individuals representing universities, schools, critics of education, etc.; 38 (54%) returned comments). Major ideas were presented as items to be rated. These ratings were used by the Committee, but are of more general interest in indicating the importance of proposed developments, and highlighting conflicting views about appropriate criterion levels for accountability (teacher performance versus pupil change) and approaches to teacher education ("technological" versus "humanistic").

Tests of Teacher Concerns Model Hypotheses

FRANCES F. FULLER and JANE S. PARSONS, University of Texas, Austin

Concerns Statements produced three factors: I Role Entry, II Self vs. Pupil, and III Teacher Teaching vs. Teacher Learning. Comparisons of scores of inservice and preservice teachers supported both the sequential and maturational hypotheses of the Teacher Concerns Model (Fuller, 1969). Inservice teachers had more concerns about pupils while preservice teachers had more concerns about themselves. Inservice teachers rated more effective had higher concerns than those rated ineffective. Concerns were stable over short time periods and advanced over preparation in most groups, but sources and patterns of change seem complex.

A Study of Some Preservice Student Teacher Characteristics and Their Correlation with Shift in Teaching Concerns

HEATHER L. CARTER, University of Texas, Austin

Preservice elementary teachers formed the population for this investigation. Hypotheses correlating concerns with respect to teaching and specified student characteristics were tested. One objective of the treatment program was to change the students' concerns. Following treatment, a positive significant correlation was found between student characteristics and concerns of students. Similar correlations were not observed before the treatment nor between students possessing the same characteristics and their concerns after traditional teacher programs. The findings suggest that the treatment was effective in producing a change in concerns and indicate certain predictor characteristics for teaching success as defined by more mature concerns.

VERBAL LEARNING I

Elaboration and Learning Efficiency in Four Ethnic Groups

DANIEL W. KEE and WILLIAM D. ROHWER, JR., University of California, Berkeley

Paired-associate learning efficiency was assessed within four low-SES ethnic populations (black, chinese, latin, and white) as a function of presentation mode and method of measurement (verbal recall vs. pictorial recognition). A mixed-list paired-associate task was administered individually to forty second grade children from each group. The results revealed no population differences, nor any interactions with presentation mode or measurement method. For all groups, performance was substantially facilitated by both elaborated modes of presentation and by the recognition method.

Paired-Associate Learning as a Function of Mediational Set in EMR and Nonretarded Children

DONALD L. MacMILLAN, University of California, Riverside

Three methods of presenting paired-associates to EMR and nonretarded children were compared. Two measures were taken on initial learning and two on generalization. Control *S*s simply named the objects; Explicit-mediation *S*s were provided with a specific sentence mediating the two objects; and Self-generated *S*s were instructed to generate their own sentences. All groups learned two lists under the above conditions and then a third list in which no set was established. Explicit and Self-generated conditions both appear to be superior for EMR and nonretarded children.

Antonym Adjective Contexts and the Facilitation of Noun Pair Learning

LINNEA C. EHRI and DANA L. RICHARDSON, University of California, Davis

A noun-pair learning experiment was designed to contrast imagistic and linguistic accounts of verbal facilitation and to examine recall patterns in children thought to differ in the tendency to process information ikonically or symbolically. Second and sixth graders (N = 160) were asked to learn 16 noun pairs linked by either verbs, antonym adjectives, or conjunctions. Results revealed that for both grade levels, adjective contexts, which aroused attribute rather than interacting image relations between nouns, facilitated as much learning as verb contexts. These results suggest that the arousal of overlapping images is not necessary for maximal facilitation in either second or sixth graders.

A Developmental Study of Imagery Instructions on Noun-Pair Learning

JOHN E. EOFF and WILLIAM D. ROHWER, JR., University of California, Berkeley

A three-way design was used to assess the effect of imagery instructions on noun-pair learning. The three principal factors were: Instructions (imagery vs. rehearsal vs. control); Presentation Mode (words vs. pictures); and, Grade (1, 3, 6 and 11). Sixty subjects were drawn from each Grade and randomly assigned to the six conditions. Analysis revealed significant main effects for Grades (favoring older subjects) and Mode (favoring pictures) but no interaction. In the word mode, Imagery instructions were effective only in the sixth- and eleventh-grade samples whereas in the picture mode they facilitated performance in the third-grade samples as well.

The Effect of Subject Generated Strings on Noun Pair Recall: Population Comparisons

JOAN P. BEAN, University of Massachusetts

Children from Low-SES-Black and High-SES-White populations learn concrete noun pairs more efficiently when nouns are embedded in subject generated and experimenter provided verbal contexts than in no-context controls. The focus was on the population source of verbal contexts (Black or White) and the effect on learning within and between populations. Two-hundred sixteen, 6th graders were aurally administered 36 pairs of concrete nouns. The results indicated that linguistic strings generated by Low-SES-Black *S*s facilitate noun pair learning for *S*s like them, High-SES-White *S*s performance was facilitated by all strings generated.

VERBAL LEARNING II

Organizational Processes in the Free Recall of Sentences

THOMAS ANDRE, State University of New York, Cortland

The present study investigated clustering of categorizable sentence lists. Sentence voice and presence or absence of modifying adjectives were manipulated. The hypotheses were that clustering would be greater when the categorizable elements were emphasized by the sentence structure than when they were not, and that unmodified sentences would show greater clustering than modified sentences. Preliminary results indicate that the hypotheses were confirmed. The implications of the results for psychological theory and educational practice were discussed.

The Effects of Verbal, Imaginal, and Rote Instructional Sets on the Learning of Concrete and Abstract Sentences

DONALD J. CUNNINGHAM, Indiana University

Thirty *S*s learned 10 concrete (high rated imagery) and 10 abstract sentences (low rated imagery) under one of three (N = 10) instructional sets: imagery, verbal, and rote. Analyses were conducted on the proportion of concrete and abstract sentence verbs, predicate adjectives, and predicate nouns recalled at two levels of strictness in scoring. Concrete sentence elements were recalled better than abstract sentence elements. Imagery instructions facilitated the recall of both concrete and abstract sentence nouns and concrete sentence adjectives while verbal instructions seemed to have their primary effect on sentence verbs and abstract sentence adjectives. Implications for reading research are discussed.

Effects of Massed vs. Distributed Practice and Word Frequency on Young Children's Free Recall

ROBERT L. HOHN, University of Kansas

Forty kindergarten children were randomly divided into High Frequency word (Thorndike-Lorge) and Low Frequency word groups and were each presented a 32-word list in a free recall setting. Words were varied under conditions of massed or distributed practice and one, two, three or four repetitions. Frequency of word occurrence did not affect performance, but both greater repetition, and distributed practice led to greater recall. Results reject the notion that novelty of words to be learned affects recall and supports the finding that distributed practice enhances young children's free recall.

Effect of Recency on Word Choice In a Sentence Completion Task

DONALD T. MIZOKAWA and DONALD J. CUNNINGHAM, Indiana University

This experiment attempted to demonstrate that recent experience affects word choice in language production. The *S*s were given recency training, two groups (N = 17 each) with equivalent lists of words, and a third group (N = 15) with a dummy list. The *S*s rated the words according to difficulty of imaging the referents. All *S*s then began the experimental task, introduced as a separate experiment. The *S*s completed 35 sentences (20 could be completed by words from the recency list; 15 were distractors). Significantly more recency than non-recency words occurred in one of the experimental groups, compared with the control group.

Absence of Priority of Free Recall of Newly Learned Items in Preschool Children

MURRAY A. NEWMAN, LEON P. EDMONSTON and NORVELL W. NORTHCUTT, Southwest Educational Development Laboratory

The two experiments reported in this study demonstrated that, in contrast to Steinmetz and Battig's (1969) data, preschool children do not display PRNI in either conventional FRL or in FRL where serial position bias is controlled. This finding, coupled with Battig and Slaybaugh's (1969) report of PRNI in FRL of adults, strongly suggests a developmental strategy interpretation of PRNI which emphasizes that the strategy is in part due to exposure to experiences (e.g., school) encouraging its use.

VERBAL LEARNING III

The Effects of Overt Verbalization on the Transfer of an Elaboration Strategy

SUSAN E. WHITELY and ARTHUR M. TAYLOR, University of Minnesota

After imagery training in generating elaborative contexts, EMR children learned two paired-associate lists under four treatment conditions varying as to verbalization of the elaborative context permitted. It was found that verbalization facilitated recall on both lists, and that a group which was permitted to verbalize on only the first list performed equivalently to a group which verbalized on both lists. It was concluded that conditions which do not permit verbalizations lead to efficient utilization of imagery training only if the EMR child has had previous experience with verbalization.

Imagery and Verbal Elaboration, Incidental Context, and the Recall of Inner City Children

HENRY W. TAXIS and ARTHUR M. TAYLOR, University of Minnesota

This study compares the effects on recall of five methods of training fifth-grade inner city children to construct elaborative relations. It was hypothesized and demonstrated that: a) imagery training resulted in greater recall and more organization than training to verbally elaborate, b) training to combine imagery and verbal elaboration facilitated recall as compared to verbal elaboration training alone, and c) incidental verbal context further facilitated imagery elaboration, while incidental pictorial contexts resulted in substantial interference with verbal elaboration. Implications are made concerning the teaching of reading and procedures for classroom training in constructing elaborative contexts.

Variations of Strategy Pre-Training for a Strategy Based Approach for Teaching Retarded Children in the United States

NILA BENDER, ARTHUR M. TAYLOR, R. HUNT RIEGEL, and JAMES E. TURNURE, University of Minnesota

The objective was to show that when pupils' pre-training, teachers' approach, and materials maximize a grouping strategy, the pupils' post-test performance is enhanced. Three pre-training conditions were used: grouping, imagery-rehearsal, and control. Sixty junior high EMR pupils completed a workbook sequence on the central states. Results showed grouping pre-training resulted in significantly superior recognition of arrays. Pupils showed a significant improvement in recognizing and labeling states on the post-test, but grouping pre-training didn't show significant transfer on the post-test. It was concluded the transfer sought requires an awareness of using strategies.

Measuring Children's Organizational Strategies by Sampling Overt Groupings

R. HUNT RIEGEL, University of Minnesota

Based on developmental research and on recent research on receptive and reconstructive strategies in children, a sequence of strategy-based activities was presented by classroom teachers. The objective of this sequence was to improve the child's ability to adapt to new stimulus conditions in more efficient ways. In addition, an instrument was designed to assess the organizational strategies most likely to be employed on new materials by EMR children. The instrument seems to accurately diagnose conceptual difficulties and to indicate appropriate access points into a training sequence. Validation of both instrument and instructional sequence appears promising.

VISUAL PERCEPTION

Aesthetic Judgments of Visual Stimuli as a Function of Stimulus Complexity and Color Mediated Arousal

MINA B. GHATTAS, Northeastern University; FRANK H. FARLEY, University of Wisconsin

In a study of aesthetic ratings of polygons as a function of visual complexity and color mediated arousal, a 2 x 3 x 22 design was used, consisting of black polygons on red versus white background, interestingness versus pleasingness versus subjective complexity ratings, and 22 levels of (objective) polygon complexity (repeated measure). 48 undergraduate females served as *S*s, with 8 per cell. Although no significant main nor interaction effects were found on background color, ratings of interestingness, pleasingness and subjective complexity varied significantly as a function of objective complexity. Relevance to experimental aesthetics, media research and instruction was considered.

Sequential Letter and Word Recognition in Deaf and Hearing Subjects

RICHARD D. ZAKIA, Rochester Institute of Technology; RALPH N. HABER, University of Rochester

Deaf and hearing college students were tested on their ability to process visual-verbal information presented in a time sequence. The deaf did better in naming words while the hearing did better in naming letters when nonsense words were sent. Performance for both groups drops as word length and speed of presentation increases, and as word imagery decreases. For deaf students there was a high positive correlation between their ability to name finger-spelled words and computer-spelled words.

Differential Cognitive Cues in Pictorial Depth Perception

ISSA M. OMARI and HAROLD COOK, Teachers College, Columbia University

Forty predominantly black third grade children were randomly assigned to 8 groups and were asked a question regarding the relationship of objects in a pictorial depth perception task. The question varied in terms of "which (looks/is), (nearer/farther) to (you/man), the elephant or the antelope?" Performance in terms of the ability to perceive depth was statistically significantly higher when the *S*s were asked "which looks/is *farther* .... rather than *nearer.*" No other effects were significant. The results suggest that the concept *farther* may provoke the *S*s to attend to the size-distance inverse relationships.

Recognition Memory of Words and Pictures in Adults

KENNETH A. JACOBUS and R. PAUL STRATTON, University of Kentucky; S. DAVID LEONARD and DAVID CORSINI, University of Georgia

A previous study by the authors indicated that preschoolers' recognition memory of pictures was superior to their recognition memory of aural words. The present study indicated a similar result for adults. However, the ratio of picture/aural word errors (misses) was smaller in the present study than in the previous study. These results supported Bruner's theory of cognitive development.

Teaching Children to Discriminate Letters of the Alphabet through Errorless Discrimination Training

BYRON EGELAND, Syracuse University; KENNETH WINER, Harford-Cecil Schools

Two groups of 16 inner city preschool children were taught to discriminate two of four possible pairs of alphabet letters using an errorless discrimination training approach. Two similar groups were taught to discriminate the same letters using the typical classroom and laboratory reinforcement-extinction approach. For the errorless training group the distinctive feature of the letter to be discriminated was highlighted in red and as training proceeded the red was gradually faded. The results indicated that the errorless training group made significantly fewer errors during training and on the posttest trials compared to the reinforcement-extinction group.

SYMPOSIA

DEVELOPMENT OF AN ADVANCED COMPUTER-BASED INSTRUCTIONAL SYSTEM

DUNCAN N. HANSEN, Florida State University, ORGANIZER

In a planned effort to improve the effectiveness of Air Force training systems via computer and related instructional technology, the Air Force Human Resources Laboratory (AFHRL) recently set forth as a major objective the development, demonstration, evaluation, and dissemination of an Advanced Instructional System (AIS).

The major goal can be stated as follows: *AIS will demonstrate that a computer-based multi-media training system can provide significant cost-effective improvements in the operation of training courses within the Air Force's Air Training Command (ATC).*

Identified subgoals can be listed as follows: 1) AIS will provide applications of the latest training technology and instructional media in order to achieve full individualization of the training process; 2) AIS will primarily focus on the managerial processes offered by the computer; 3) the application of the most cost-effective multi-media approaches to training will be employed for both improved learning outcomes as well as potential cost savings; and 4) AIS will be modular and flexible in that it will expand naturally from the current ATC training system for three prototype courses and become effectively integrated into the recruitment and training process for the total Air Force. The prototype implementation of AIS at Lowry Air Force Base, Colorado, will ultimately grow into a network resource having the capability of supporting training systems throughout the United States.

This symposium will discuss the history, development, and implications of the computer-based AIS within both the military and civilian sectors. The AIS concept underwent a feasibility analysis conducted by Westinghouse Learning Corporation which was completed in August of 1970. Design specification of the entire AIS will have been completed by January of 1972. These specifications are unique in the educational and training world in that the state-of-the-art hardware, media, and software technology will be integrated with proven management techniques and personnel configurations in a comprehensive system which will optimize student learning as well as provide for efficient administration of instruction. Additionally, the AIS specification makes provision for extending the state-of-the-art through research innovations which will provide increased system flexibility and growth.

Proposed participants in the symposium represent multiple perspectives within the educational and training world as related to AIS development. Speakers represent the Air Force, the AIS specification contractor, the National Science Foundation, and the Office of Naval Research.

Dr. Marty Rockway and Mr. Joseph Yasutake represent the Air Force Human Resources Laboratory (AFHRL) at Lowry AFB, which serves as the project monitoring office. Dr. Rockway's presentation, The Origins of AIS, will relate to the genesis of the AIS, and will further relate to the explication of AIS goals as envisioned by the Air Force.

Concurrently with the specification effort, three additional AIS-related contracts were awarded for development of individualized self-paced instructional materials for the three existent courses. A fourth award was made for the design of multi-media learning carrels. Mr. Yasutake's presentation, Management of a Multi-Phased Research Project, will focus on the relationships between these four AIS contracts and the specification effort.

The civilian contractor for the development of AIS design specifications was designated as the Florida State University's Center for Computer-Assisted Instruction. Representing this organization will be Dr. Duncan Hansen, Mr. David Thomas, and Mr. Dewey Kribs. Dr. Hansen's presentation, Planning a Computer Based Learning System, will focus on a review of the AIS specification process, a summary of each of the major subsystems required, and an evaluation of the substantive issues which were identified during the design specification effort.

The nature of the AIS system as designed will be discussed by Mr. Thomas and Mr. Kribs. Mr. Thomas will describe the instructional and media subsystems as they were designed to provide for computer testing, CAI, adaptive training algorithms, resource scheduling, instructional materials generation, and media selection and production. His paper is titled Instructional Strategies for AIS. The management and computer subsystems will be described by Mr. Kribs in his paper, System Design and Operation for AIS. The management and computer consist of language and operating environments for CAI and CMI, random access data files, scheduling routines, progress and status monitoring routines, a data analysis package, common language compilers, and an application program for providing systems effectiveness information from continuously collected usage data. The computer subsystem will be modular and assure upward compatibility with evolving hardware. Rapid recovery from system failure is a major requirement.

A panoramic view and critique of the importance of a comprehensive computer-based instructional system in general, and AIS in particular will be given by the discussants, Drs. Victor Fields and Andrew Molnar. Dr. Fields is Head of Personnel Training at the Office of Naval Research. His critique will focus on the present and future requirements within the military for large scale instructional systems which provide for individualized technical training. He will stress the currently existing problems which relate to large trainee flow requirements, the role of individual differences, and the requirement for continual revision due to technological change.

Dr. Molnar's presentation will draw on his broad experience as special projects officer for computer applications in education within the National Science Foundation. His critique will provide a statement of the importance of computer-based instructional systems to individualized instruction as well as a scenario of the potential impact of the AIS on American educational practice.

The presenters and discussants represent many aspects of instructional systems development related to the project being discussed. The AIS implementation is potentially the most far-reaching development in educational practice in two decades. Researchers have developed innovations along many dimensions: individualized instruction, computer technology, management techniques, instructional media devices, and other developments within education and the sciences. Never before has a single system been designed and implemented specifically for instruction and training on such a large scale incorporating all aspects of state-of-the-art technology while providing for future research innovations. The symposium's educational importance lies in informing the research community of this project so that potential users of this and similar computer-based systems may follow its continual development.

INTERFERENCE AND THE FORGETTING OF PROSE

THOMAS ANDRE, State University of New York, Cortland; RAYMOND W. KULHAVY, Arizona State University, ORGANIZERS

The adequacy of interference theory as an explanation for the forgetting of material learned by reading has been a controversial issue in educational research. This symposium focused on an examination of the various theoretical positions in the light of the growing body of research on interference in prose. The individual presentations critically examined the literature in order to determine those variables which control the process of forgetting and which future research might profitably explore. In addition theoretical and educational implications of the research were suggested. Following the individual presentations, two discussants presented critical analyses of the papers and attempted to highlight the important issues raised. Finally the audience was invited to address comments and questions to the participants and discussants.

"Retro- and Proactive Inhibition Following a Change in Context Using Meaningful Prose" was presented by Larry Jensen of Brigham Young University. The variable of changed context has important implications for a theory of the forgetting of meaningful prose. It was predicted that retroactive and proactive inhibition could be produced using meaningful passages of prose. In addition, it was hypothesized that if the interference session took place in a context which was markedly different from the room used during learning, the amount of retro- and proactive inhibition would be less. Also, if there was a contextual change between the learning and the recall session, retention would be less. A passage describing Jim as an extrovert was presented, and one describing him as an introvert. A classroom and cafeteria served as contrasting contexts. The hypotheses were confirmed. Theoretical implications of these findings were discussed.

"The Similarity Variable and Retroactive Interference Effects" was presented by Jacqueline Haveman of Boston College. The conceptual nature of the similarity variable as it exists between prose materials used in retroactive interference studies has been little explored. Most researchers have developed materials that were judged to be similar through some form of logical or rational analysis and their empirical findings have been inconsistent. Consideration of the importance of psychological as well as logical similarity may reduce this conflict. A theoretical model was proposed that incorporates aspects of similarity and adds to generalizability between studies. Analysis of this variable is necessary before application can be made to the classroom.

"New Directions in the Study of Retroactive Interference in Prose Learning" was the topic of Dennis L. Anderson of Carleton College. Researchers who have attempted to investigate retroactive interference in prose learning have been confronted with a number of theoretical issues. Among these are the controversy related to rote versus meaningful learning and whether or not models used in traditional verbal learning studies are appropriate for studying the retention of prose material. In order to deal more adequately with these issues it may be necessary to develop new models for investigating the retention of meaningful materials. A model based upon the use of set relations was presented as a possible approach. The relevance of this type of research for classroom learning was also discussed.

"Variables Affecting Interference in Meaningful Verbal Learning" was the topic of Martin R. Wong of the University of South Florida. The literature covering the study of interference effects in meaningful verbal learning is replete with contradictory findings. The most obvious explanation for their contradictory findings is the lack of control in studies reported. One source of variation is the many interpretations of what is meant by meaningful verbal learning. An attempt was made to clarify the apparent cocophonous state of the research results by reviewing them through a gride differentiating the kind of "meaningful material" used, poetry prose under normal classroom study conditions; prose under lab conditions; connected discourse; disconnected words. Other variables were also looked at. Initial results indicate a clarification.

"An Information-Processing Model of Memory and Forgetting" was presented by Thomas Andre, State University of New York, Cortland. Examination of the research literature on mechanisms of forgetting suggested that neither interference theory nor meaningful learning theory are adequate to explain the data on forgetting. An information processing model of memory and forgetting, that seems to provide a better fit to the data, was outlined. Two of the major components of the model are the computation of storage locations based on the characteristics of the input and the search of a constant amount of storage at the time of output. The model was shown to predict results that are contradictory to both interference theory and meaningful learning theory.

James H. Crouse, University of Delaware and Merlin C. Wittrock, University of California, Los Angeles will discuss the papers.

ISSUES IN LEARNING FROM DISCOURSE

FRANK H. FARLEY, Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin, ORGANIZER

Learning from prose or discourse research admits a wide variety of orientations in theory and methodology. The objectives of this symposium are to present different current orientations to this area, and to present empirical data which bear on these orientations. Consideration of these viewpoints and data should provide impetus to further research and understanding in this area, and suggest converging theoretical and empirical operations.

Frank H. Farley, Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin, will present the paper "Arousal and Imagery in Children's Processing of Prose."

Roy Freedle, Educational Testing Service, will present "Some Factors Which Affect the Decisions We Make When Exposed to Prose Material." The first problem explores some factors which affect the manner in which we identify the topic underlying a meaningful and connected string of words, from a finite list of subject matters (history, linguistics, anthropology, psychology, botany, physiology, physics and geology). The results showed that (a) as the number of alternative subject matters given to a *S* from which he made his identification increased from two to eight, the poorer was his ability to match the word string against correct subject matter from which it came, (b) for a fixed number of subject matters, as the amount of connected prose increased, the number of correct identifications increased up to perfect identification, and (c) subject matters which tend to emphasize social relationships (such as history, linguistics, anthropology, psychology) are more readily mutually confused than they are confused with subject matters which emphasize non-social concepts (such as botany, physiology, physics, geology). Two models are presented which attempt to clarify the kinds of cognitive divisions that are made in identifying subject matter.

The second problem associated with prose comprehension is addressed to how explicit information given in a story is remembered, and how what is remembered will constrain the kinds of inferences that can be made about the story. By extending a conception due to Robyn Dawe (who maintains that what is learned when people listen or read prose is the set relation among key elements in the passage), the results of a study which employs a new method for assessing our memory for set relations were found to be dependent upon the particular quantifier used in the prose passage (the quantifiers were words such as all, some, or none). Several problems are then posed and some solutions offered for how our memory of the explicit set-relational information places constraints on our ability to draw inferences from the prose material.

Jerome L. Myers, University of Massachusetts will discuss "The Effect of Organization of Prose Passages on Recall and Retrieval Time." In numerous recent studies of free recall, word lists organized by semantic category have been recalled more accurately and with a greater degree of organization than randomly organized lists. The present research considers the organization variable in the context of simple prose passages. Twenty-five sentences describe five attributes (climate, topography, language, agriculture, exports) of each of five mythical countries. These sentences were then divided into five paragraphs of five sentences each. Organization was either by name (N; each paragraph dealt with a different country), by attribute (A; each paragraph dealt with a different attribute), or random (R).

Subjects were required to read each paragraph for 40 seconds, and were then given six minutes to write down whatever they could recall. This was done three times. Cluster indices were highest for N *Ss*, R *Ss* showed considerably more N than A organization of output, and A *Ss* frequently organized their output around names while N *Ss* organized their output exclusively around names. Despite this clear tendency for N output to evoke better organization of output and despite strong indication that N output is preferred to A, A *Ss* recalled significantly more than N *Ss* on all three trials. R *Ss* did as well as N *Ss*.

One possible explanation is that reorganization of the input involves more processing and therefore better recall. Such reorganization was apparently occurring in the A and R groups who tended to organize their output around names. To test this hypothesis, three groups were run with instructions to serially recall. A *Ss* did as well as their free recall counterparts while N and R groups showed a significant impairment typically reported in studies of serial recall of lists. Thus it appears that the advantage of A *Ss* is at least as great and perhaps greater under serial as compared to free recall. Two other explanations suggest themselves. First, under A input the nonsense names of the countries received distributed practice while under N and R *Ss* perform less well than A *Ss* because of greater difficulty in learning the names. Analysis of errors of omission do not support this argument.

A more likely explanation is suggested by responses to questionnaires and by further data analyses. A *Ss* frequently report that they develop a strategy of learning lists of names, climates, languages, and so on. Since names were in the same order in each attribute paragraph, such a strategy is highly effective and equally sound for both free and serial recall because serial order information is easily retrieved. N *Ss*, on the other hand, appear to learn several lists consisting of a name and five attribute values with the attribute values in no particular order. Their learning is also more characterized by the use of mnemonics and imagery.

In addition to the recall studies reported above, a variation of the Sternberg memory search task has been carried out with the same prose materials. Preliminary analyses indicate that rather orderly search processes are taking place in the retrieval of name—attribute information. These data will provide a preliminary base for assessing the efficiency of various organizations of prose.

Ernst Z. Rothkopf, Bell Telephone Laboratories, will present a paper entitled: "Shopping Lists, Shopping Carts, Memory Store." Capacity limit has been a persistent but elusive concept in theoretical accounts of learning from written discourse. Attempts have been made to characterize this limit in terms of rate of information processing in time, amount of learning per inspected unit, and so on. The concept has substantial intuitive appeal but it has been difficult to translate into operational language. It implies however fairly clearly that, when capacity is exceeded, there is a discernible trade-off between (a) factors that determine difficulty of processing on one hand and learning on the other; or (b) between learning of non-intersecting subsets of experimental passages.

Evidence concerning the capacity limit hypothesis will be examined in the light of new experimental data on the relationship among learning measures, various measures of inspection rate, and stylistic characteristics of text. A second source of data about capacity limits are recent experiments about the effect of density of instructional objects in text on incidental and intentional learning. These findings as well as results from experiments on the phrasing of instructional objectives will be discussed in terms of the sources of limitation of peripheral and control processes during the study of written instructional materials.

Lawrence T. Frase of Bell Telephone Laboratories will discuss the papers.

MATHEMATICS IN EARLY CHILDHOOD: RESEARCH AND CURRICULUM

ROBERT E. REA, University of Missouri, St. Louis, ORGANIZER

The first paper will be "Classificational Abilities of Young Children" by Leslie P. Steffe, University of Georgia. In this presentation, classification abilities of young children will be discussed from a mathematical and a psychological point of view. Capitalizing on a basic theorem in mathematics which states that a one-to-one correspondence exists between the equivalence relations on a set S and the partitions of S, classificational abilities based on set equivalence and the congruence relation for segments, each an equivalence relation, will be discussed. How these relations and abilities are logically related to Piagetian cognitive development research will be discussed, during which structural characteristics of classification will be made clear and researchable problems identified. Results of empirical studies done in light of the problems identified will be given, with suggestions for further research.

The second paper will be "Mathematical Abilities of Entering Kindergarteners" by Robert E. Reys, University of Missouri, St. Louis. A pilot test project with an experimental instrument, the Comprehensive Mathematics Inventory, (CMI), has provided information concerning the mathematical abilities of over 700 children entering kindergarten. The similarities and differences between and among these subjects according to such variables as age, sex, family, race, and community type make for much interesting speculation, and provide certain assumptions for curriculum development.

The third paper will be "Environmental Academics—A Pre-School and First Grade Program" by Robert C. Dwyer, University of South Florida.

In the Fall of 1970 Environmental Academics was introduced in approximately 75 pre-school classes in Hillsborough and Pinellas Counties, Florida. These include 36 Head Start classes, 8 Migrant classes, and a number of classes at day care centers in the area. The program is also being used in 8 pre-school programs for the mentally retarded, and in one class of deaf preschool children.

The purpose of this program is to help the child acquire skills and concepts in the process of solving problems he wants to solve. The academics (numbers, reading, writing and oral language) are embedded within the problem-environment.

In Environmental Academics the child selects the items which he wants, by choosing word cards and number cards which are set in a rack in the classroom. The child walks over to the rack, chooses his cards according to what he thinks they say. He then goes to the table where the items are spread out, and counts out the items on his card, the kind and the amount. He solves the problem of matching the number on his card to the number of items that he takes, at his own level and in his own way, using dots printed on the back of the card if he needs them. These items are now his to keep. The child thus learns to discriminate through trial and error.

Each set of words and numbers is repeated for several days. At the beginning of the program, only two choices are offered each day. By the end of the program, nine or ten choices are offered each day.

The fourth paper will be "Mathematics Through Activities and Materials and Self Conforming Behaviors for Three and Four Year Olds," by Edward Uprichard and John Wilson, University of South Florida. A theoretical rationale will be presented for a Number Program for 3 and 4 year olds which is based on self-conforming behaviors. The program is entirely embedded in materials and activities with pupil activities developed through the manipulation of concrete objects. The program has been pilot tested in Southern Florida and results will be presented. Additional research indicated as desirable by the project will be suggested.

The fifth presentation will be "Number Program for Primary Schoolers" by James Moser, University of Wisconsin. The development work at the University of Wisconsin Research and Development Center in the area of number represents an attempt to delve into the thinking styles of youngsters. The program being developed is based largely on what we know through trial "will work". The program as it is developing will be described, and implications for other research and curriculum projects will be presented.

The last presentation will be "An Activities- and Materials-Based Number Program for Kindergarteners" by Harold H. Lerch, University of Illinois, Urbana-Champaign. The program to be described has been developed "on the spot" in kindergarten classrooms in Carbondale and Urbana, Illinois. With a commitment to an informal approach within a planned approach, to a non-structured individualized program, to a materials and activities encasement, the program has developed by selection, revision, and rejection processes. Research data has been gathered and will be reported. Moreover, implications for additional investigations and development projects will be presented.

ORAL LANGUAGES DIFFERENCES: LINGUISTIC AND ATTITUDINAL CORRELATES

THOMAS D. HORN, University of Texas, Austin, ORGANIZER

The objectives of this symposium are: 1) to report recent research in oral language instruction and the assessment of oral language, and 2) to discuss the implications of this research for the improvement of instruction.

Muriel R. Saville, The University of Texas, Austin, will present the paper "Linguistic and Attitudinal Correlates in Indian Education". The Indian student's competence in language is not limited to his grammatical control over his linguistic systems—usually a native language and English. "Communicative competence," as defined by Hymes, includes expectations regarding linguistic behavior in encounter situations and attitudes toward language use.

The critical relationship between attitudinal variables and the school achievement of Indian students has been solidly established by research and observation. This presentation identifies those variables reported which are related to linguistic differences, and adds data collected during the course of the author's involvement in Navajo/English bilingual education. Examples include purposes for using a language, naming conventions, taboos, styles of learning, and such related speaking behavior as gesture, intonation, and the use of silence.

Conclusion: It is only by accepting the Indian student's attitudes as an educational base and relating our pedagogical approaches to those values that we can teach him effectively.

N. Ruth Bradley, Lafayette Louisiana Schools, will discuss "Oral Language Proficiency in Reading Achievement of First Grade Children with a French Linguistic Background". In September 1969, a longitudinal study was begun to investigate the language patterns of school beginners from three socioeconomic groups in one of the Acadian-French parishes (counties) of Louisiana. The children were given a two-part oral language test which used a sentence repetition technique and a series of pictures to elicit free speech. This test, which yielded measures of phonology, morphology and fluency, was given in October 1969 and April 1970 to 200 first grade pupils. The reading test of the SRA Primary Achievement Battery was administered to the same sample in April 1971.

During the second year of the study an oral language development program, the *Gloria and David Beginning English* series, was introduced to a part of the disadvantaged black population. The oral language test was administered to this group and a control group from the disadvantaged black population in March 1971.

Conclusion: There are distinct differences in the language patterns of beginning first graders in the three groups sampled. A study of the change in language patterns of Negro children in integrated schools and in segregated schools revealed no differences in the rate of change in morphology and phonology. Correlations between reading achievement and the phonology and morphology measures of the oral language test seem to indicate that instrument's value as a predictor of reading achievement in disadvantaged black children. The language patterns (phonology and morphology) of the children receiving the experimental oral language development program changed at a much more rapid rate than did those of the control group. While differences in reading achievement between these two groups were not statistically significant, the difference favored the experimental group.

Diana S. Natalicio, The University of Texas, El Paso, and Frederick Williams, Center for Communications Research, The University of Texas, Austin, will discuss "Repetition as an Oral Language Technique". The aim of the present research was to assess the degree to which sentence repetitious of black and Mexican-American children (grades K-2) could be used as a basis for language evaluation. Tapes of ten black and ten Mexican-American children who had responded to a set of commercially available test materials were evaluated by panels of experts. Evaluations for both groups were in terms of judgments concerning language dominance, SAE comprehension, SAE production, SAE phonology, SAE intonation, SAE inflections, SAE syntax, language pathologies and predictions of reading achievement. In addition, the Mexican-American children were evaluated on Spanish comprehension, Spanish production, Spanish phonology, Spanish intonation, and Spanish syntax. For each scaled evaluation, evaluators provided a description of their bases for judgment. Finally, evaluators responded to open-ended questions regarding instructional needs, reading achievement and overall reactions.

Conclusion: Results indicated high reliability of scale judgments, except for ratings of intonation, language pathologies and for predictions of reading achievement. The comments which served as bases for making scale judgments were highly consistent with language deviations typically identified in the two linguistic samples, and were congruent with the scale ratings themselves. Responses to open-ended questions were markedly inconsistent, often reflecting reticence to make major judgments based upon limited data as well as reflecting differences in philosophies for language instruction.

Richard E. Sullivan, University of Rhode Island, will discuss "Differences in Oral Language as Bases for the Prediction of Spelling Errors". This research compared oral language production with the written realization of this production for a group of white and a group of Negro second graders attending public schools in Austin and San Antonio, Texas, respectively.

Using an individually administered sentence repetition task to obtain a measure of oral language production, fifteen words were selected from the oral language assessment according to the criterion of a ten percent pronunciation difference from the model for all phonemes within a word for all children in both groups.

Scoring of the test was done in two ways: (1) a count was made of correct grapheme correspondences for the phonemes comprising the test; and (2) the tests were scored on the basis of rational and irrational grapheme/phoneme correspondences. In addition, twenty-five correspondences were selected for detailed analyses.

Conclusion: Pronunciation differences which existed for the Negro children included those that existed for the white children. There was less variation between groups for oral production than for the written realization of the production. The Negro pupils omitted significantly more words and had significantly more irrational words than did the white pupils. Of 237 comparisons made between groups, 66 percent were not significant.

The relationships that existed between pronunciation differences and spelling deviations for certain correspondences suggested that certain oral language characteristics including dialect features did effect spelling.

Frederick Williams, Center for Communications Research, The University of Texas, Austin; and Diana S. Natalicio, The University of Texas, El Paso, will present the paper: "Carrascolendas: Evaluation of a Bilingual Television Series." This research represented the systematic evaluation of the production and effects of the television series "Carrascolendas," a program designed to facilitate the bilingual education of Mexican-American children. Product evaluation, or assessment of the effects of the series, was conducted by means of a field experiment involving children from the target audience population and by a survey of schools which used the program. Results of the field experiment indicated statistically significant learning gains of television viewers (as against a control group) in English tests of multicultural social environment, English language skills, physical environment, and cognitive development. Viewers also gained significantly in measures of overall language performance in both Spanish and English. These results had generality across first and second grades (except multicultural knowledge which increased only for second graders) and across classrooms either engaged or not engaged in bilingual instruction programs.

Kenneth S. Goodman, Wayne State University, Ray Mazon and Mark W. Seng, University of Texas, Austin will serve as discussants.

PARADIGMS IN CONCEPT ACQUISITION

RICHARD C. BOUTWELL, Brigham Young University, ORGANIZER

A behavior of central importance to all educators is that of concept acquisition. The proper method of teaching concept behavior has been the subject of many research efforts. Some of these research studies have tended to confuse the subject because of their lack of precision in specifying the essential independent and dependent variables associated with the desired behavior. This symposium examines some of the frequently proposed methods for investigating concept instruction and introduces paradigms which operationally define cognitive operations, predict errors, and provide methodology to make the transition from the experimental laboratory to the classroom.

This symposium is composed of four presentations, given by educational psychologists who are all concerned with describing an empirically based theory of concept instruction. These authors have each approached this problem from different theoretical positions.

"Conceptualizing Behavior of School Children" will be presented by Herbert J. Klausmeier, University of Wisconsin. A model of cognitive operations involves four levels of concept formation and the related cognitive operations, Klausmeier (in press). The four forms of concepts in the developmental sequence are designated as a concrete concept, an identity concept, a rudimentary classificatory concept, and a formal classificatory concept. The cognitive operations involved in forming the successively higher level concept start with discriminating objects on a nonanalytic perceptual basis and eventually include more complex operations such as discriminating the defining attributes of a concept population, hypothesizing a concept, and evaluating hypothesized concepts according to various criteria. Also the use that the individual makes of learned concepts changes markedly with increasing maturity. The results and implication of studies validating cognitive operations will be presented and discussed by the symposium.

"Relationships between Exemplars and Nonexemplars in Alternate Presentation Procedures in Concept Acquisition Instruction" will be presented by M. David Merrill, Brigham Young University. Two studies were conducted dealing with concept acquisition. The first study was a pilot study and is similar to Dr. Robert Tennyson's on the optimal temporal and spatial relationships of exemplars and nonexemplars in instruction. This study used a different population and task.

The second study was concerned with various types of presentation procedures for concept acquisition. The task used was the concept trochaic meter from poetry. The independent variables involved the following presentation procedures: (1) presentation of a definition only, (2) presentation of a definition plus further definition of the attributes, (3) presentation of exemplars and nonexemplars only, (4) presentation of the definition plus exemplars and nonexemplars, and

(5) presentation of the definition plus exemplars and nonexemplars using a prompting procedure which calls *S*s attention to relevant attributes.

The preliminary findings indicate that higher correct classification scores result when a definition is accompanied by exemplars and nonexemplars and that the best correct classification scores were attained when an attribute identification prompting procedure is employed during instruction.

"Concept Learning and Learning From Prose" will be presented by Lawrence T. Frase, Bell Telephone Laboratories. The classical literature on concept learning has relied heavily upon an inductive paradigm. In contrast, an expository text might teach concepts by asserting relationships in a small number of sentences. Is telling what a concept is, sufficient? If not, how should one tell what a concept is, i.e., what things should a writer know and do to insure concept acquisition from text? This paper reviews the contribution that concept learning literature might make toward an understanding of prose learning. It deals with the problem, processes and variables that are common to laboratory and reading tasks. The author considers the role of structure, sequence, exemplars and nonexemplars, etc., in prose learning, and treats the question of what current research, methodology and theory is available to provide a transition from the experimental laboratory to the prose learning situation.

"Instructional Model for Concept Acquisition" will be discussed by Robert D. Tennyson, Florida State University. A new concept is acquired when a person correctly identifies previously unencountered objects or events as members or nonmembers of a particular class. In order to assess concept acquisition both exemplars and nonexemplars must be presented to the learner and his ability to generalize to new exemplars and discriminate them from nonexemplars observed.

The present paradigm identifies instructional variables which operationally define procedures to predict learner acquisition, and if manipulated logically, predict the errors. These errors are: overgeneralization (occurs when the learner correctly identifies all of the exemplars as class members, plus identifying some nonexemplars as members of the class); undergeneralization (occurs when the learner identifies the more obvious exemplars as class members but indicates that less obvious exemplars are not class members); and misconception (occurs when the learner falsely assumes that some irrelevant attribute or combination of irrelevant attribute or combination of irrelevant attributes is relevant).

The instructional paradigm involves the manipulation of three variables: probability, divergency and matching. Probability refers to the difficulty level of exemplars for a specific population. Divergency, refers to the relationship between exemplars.

Matching refers to the relationship between exemplars and nonexemplars. In this situation the irrelevant attributes should be as similar as possible, with the difference between the two being the relevant attributes.

Instruction developed according to the paradigm outlined does operationally define the relationship of instances. Empirical data does substantiate the manipulation of variables.

The educational importance of this symposium is that for the first time the emphasis of the research is on concept instruction and the teaching of concepts rather than the basic learning mechanisms. Three very different approaches have been brought together representing different techniques and paradigms in the teaching of concepts, rather than how people learn concepts.

Those three paradigms include the manipulation of concept exemplars and nonexemplars, concept presentation in prose learning, and a model of cognitive operations which postulates levels of concept acquisition. The definition and exposure of these parameters in teaching new concepts should carry important implications to the classroom teacher as well as the research and development centers across the country.

PRESCHOOL EDUCATION VIA TV: CURRICULAR OBJECTIVES, METHODS OF INSTRUCTION AND MEANS OF ASSESSMENT

EUGENIA M. KOOS, Mid-Continent Regional Educational Laboratory, ORGANIZER

The success of *Sesame Street* in accelerating letter and number recognition by preschoolers appears unquestioned. It may be that the effectiveness of the TV medium for bringing about learning could best have been demonstrated only in this dramatic way. But to prepare children for living in a complex society, however, would seem to require thoughtful designation of learning objectives that make full use of the medium's potential as a vehicle for simulation. Only in this way can the need for acceleration of multi-dimensional learning be met. The medium is so powerful a tool for instruction during the critical preliterate years that decisions on its use should be a matter of interdisciplinary discussion and public involvement.

Proponents of different learning theories may need equal time in public forums in which they would present evidence for the greater desirability of their chosen positions. Careful studies of research findings on the effectiveness of the methods being proposed will be required and objectively interpreted in order to provide decision-makers with necessary information about means of attaining desired objectives. Thus it is of considerable importance that we resolve the problems associated with attempted assessment of outcomes of instruction via a medium that spans vast distances between source of the signal and its reception by the learner.

READING: THE STATE OF THE ART

STANLEY F. WANAT, International Reading Association, ORGANIZER

In July, 1970, three U.S. Office of Education sponsored studies of reading began. These studies were to 1) characterize the reading activities of adult Americans and to set goals for what they should be reading, 2) analyze the research literature on language development, learning to read, and the reading process, and 3) describe the nature of the reading problem in the U.S., the types of methods and materials used in the teaching of reading, and the status of teacher training programs in reading.

The purpose of these research projects was to provide information which could serve as a basis for setting national literacy goals, for future reading research activities, and for developing new materials and techniques in teaching reading. At the 1971 American Educational Research Association's meetings, a symposium was presented to inform the educational research community about the *activities* of these three projects. Now that two of these three projects have completed their activities, and the third is approaching completion, the objective of this symposium is to present the *results* of these studies.

Donald A. Trismen of the Educational Testing Service, will present an analysis of criteria for reading achievement. The purpose of the ETS Princeton project was to describe the reading behaviors of American adults, and then to develop a set of tasks to be used to assess achievement in reading. The tasks aim to be representative of the tasks that adults actually engage in. Also, a measure of the value of each task to the reader was to be ascertained. These value measures are based on the results of a survey, and on opinions given by a panel representing different groups in American life.

This report on reading goals will present the results of surveying this panel of representatives on what Americans ought to be reading. The judgments of a sample of approximately 4,500 adult readers on the value of different kinds of reading activities will also be presented. An analysis of the reading activities of the people in this survey will be provided, dealing with four content categories (books, newspapers, magazines, mail) and in various daily activities (meals, working around the house, school, work, traveling or commuting, shopping, club or churck, theater, games or other public events, and recreational and free time). Finally, a description of the development of these selected reading tasks, and the nature of the tasks themselves, will be discussed.

Martin Kling of Rutgers University will present the results of the Literature Search in Reading. The principal outcomes of the Literature Search were the detailed analysis of approximately 900 references and the writing of 21 analytical and critical papers summarizing the research on various aspects of reading.

Without an adequate and integrated understanding of the behavioral operations upon which language and reading are based, appropriate procedures for teaching beginning reading to all children, and for development and refinement of these complex skills cannot be constructed confidently and effectively. Yet a great body of uncoordinated evidence of varying quality has been accumulated concerning language and reading, and in recent years a number of basic disciplines increasingly have concerned themselves with questions related to these areas. To be useful to the educator, this diverse body of literature must be identified, evaluated and integrated.

The specific objectives of this project were to:

1. Identify and evaluate all significant contributions to the literature in:
    a. language development
    b. learning to read
    c. the reading process
2. Identify explanations in the literature of how these processes operate and how the behavioral events of operations within them interact.
3. Describe and synthesize models and partial models, to present as many different logically coherent models in each area as seemed necessary.
4. Describe hypotheses and associated tests needed to refine and extend models presented, to test assumptions and to synthesize with them the unincorporated facts and insights of fields studied.

This report will characterize the approximately 900 references which were analyzed in detail by the project. Such factors as the *types of models* of language development, of learning to read and of the reading process will be discussed. The type of model (e.g., isomorph, analogy, or example), its comprehensiveness, and its research basis will be analyzed. The constituent elements of the various models will be presented, along with their strong conclusions and their assumptions. Additionally, the research designs of the studies underlying the models will be critiqued. A synthesis of the theories within each of the three areas will be presented, along with a synthesis of the theories across all three areas.

Patricia Elias of the Educational Testing Service, Berkeley, will present a report assessing the extent and distribution of the reading problem in the U. S. The first part of this report will consist of the identification, analysis, evaluation, and summary of existing survey and test data. The report will assess the reading characteristics of various groups, dealing with factors such as sex, age, race, I.Q., S.E.S., geographic area, home language, and parents' education.

Second, different methods, texts, and equipment used in the teaching of reading will be reported on. The relationship between different knowledge-bases and various methods of teaching reading will be evaluated, and the relationships between methods of teaching reading and the achievement of various subgroups of learners will be assessed.

Third, the nature of teacher training programs in the field of reading will be described, along with certification standards for teachers of reading in the U. S. Finally, studies of the relationship between teacher training programs and teacher performance will be summarized and evaluated.

The analyses to be presented here are based on an examination of approximately 1,800 references. Studies were critically reviewed using a set of analytical rating criteria. A synthesis of these 1,800 studies will be presented as a basis for providing information about the teaching of reading and the reading status of various subpopulations in the U. S.

Marvin Glock, Cornell University, Sara Lundsteen, University of California, Irvine; Stanley F. Wanat, International Reading Association, will discuss the papers.

THE ROLES OF RESEARCH IN INSTRUCTIONAL DEVELOPMENT

EVA L. BAKER, University of California, Los Angeles, ORGANIZER

Observers on the educational scene must conclude that recent trends indicate an increasing dependence upon instructional development rather than on more traditional forms of instructional research to solve pressing educational problems. Although such is the proper role for development endeavors, a shift in emphasis is not likely to be greeted with universal acclaim. Because Division C members of the American Educational Research Association probably have the most obviously vested interest in maintaining support of instructional research, per se, it seems especially appropriate that a symposium on the research-development interface be addressed to them. The symposium participants, both presentees and discussants, include individuals who have had enormous experience in both research-focused organizations and in development agencies. By presenting their reason perceptions of the ways research studies interplay with instructional development, they will be providing information from which the Division C audience can clearly profit. While one does not hope for instant alternation in the career lines of the audience, one would expect that the discussion could at the very least stimulate the audience to conceive of new ways to utilize existing research skills, perhaps in specialized instructional development contexts.

While it is conceded that instructional research has had difficulty in producing results of agreed-upon impact, the promise of instructional development may be short-lived, if procedures, whether or not research-based, are not evolved for improving the technology from which instructional development springs. The symposium will also be addressed to this problem.

TEACHER-PERFORMANCE CRITERIA: THEIR SPECIFICATION, EVALUATION, APPLICATION IN THE SCHOOLS, AND IMPLICATIONS FOR TEACHER EDUCATION

ESIN KAYA, Hofstra University, ORGANIZER

The proposed symposium is organized to present the different involvements of different institutions in the specification and evaluation of teacher performances, in their utilization by school districts, and in their incorporation to developing teacher preparation programs. The participants in the symposium have formed a consortium to deal with these different aspects in a coordinated manner. The papers represent an account of the actual experiences of each institution and a specification of what is desired in the future.

Dr. Robert Finley's (Glen Cove Public Schools) paper leads the symposium. It lists a number of "performance criteria" currently used in certifying teachers as proficient, and contrasts these with performance criteria that would be desirable to have in a school district. Thus the paper establishes the need for a new set of criteria which should serve as the behavioral objectives for teacher preparation programs. Emphasis is placed on experience rather than course-completion, skills needed to individualize, rather than fulfill requirements for all, teaching people instead of a subject or grade-level. Some specific attempts to shift these emphases are described.

Dr. Esin Kaya's (Hofstra University) paper gives an account of the process of specifying teacher behaviors and establishing a taxonomy based on empirical data. The results of research utilizing 144 teacher behaviors falling into a predetermined classification system are presented. A taxonomy of teacher behaviors is proposed based on differentiated roles to be performed by teachers with differing talents, interests, competencies, and proficiency. The taxonomy is explained in detail with sample behaviors in each category. Evaluation based on the proposed taxonomy would yield a profile for each teacher to be considered by a school district in hiring staff. The profile would be descriptive of an individual's strengths and weaknesses thus assuring a matching of the individual with the job without the necessity of passing or failing anything.

Dr. Fred McDonald's (Educational Testing Service) paper gives an account of the research and development conducted at the Educational Testing Service concerning the evaluation of teacher performances. It specifically describes in some detail the research that has resulted in the development of new tools for evaluating teachers' discussion skills.

Dr. Jonathon Messerli's (Hofstra University) paper briefly places the "teacher-performance" movement in its historical perspective and discusses an input-output model of teacher-training as it has been and as it is likely to be in the future. So far professional educators have concerned themselves with input (the incoming novice) and with a controlled and manipulated process (the formal curriculum), confident that as these two components were improved so too would be the output. Now with the identification of desirable teacher performance, the attention must shift to the actual output and then work back. To do this will not necessarily force the abandoning of the older model. It will give a more realistic set of priorities, will undercut the hegemony of the 3-semester hour course, will blunt the endemic strife between "academicians" and "educationists" by creating better cooperative efforts, and will challenge the tyranny of the grade point average in admission procedures. It will provide an effective empirical basis for systematically reforming the present teacher-training programs and ultimately improve the quality of teaching in the schools.

Dr. William Boyd (New York State Education Department) was selected as the discussant to criticize the symposium in view of the New York State Education Department's interest in exploring new styles of certification. Changes in teacher certification procedures implied by the preceding papers are weighed against the possibilities that are realistic, efficient and effective in meeting the instructional needs of public schools.

VERBAL LEARNING AND READING RESEARCH: SOME PERSPECTIVES ON LEARNING BY READING

GARY M. INGERSOLL and DONALD J. CUNNINGHAM, Indiana University, ORGANIZERS

This symposium will focus on the topic of learning by reading by exploring the possible points of articulation between reading research and verbal learning research. It is our belief that these two sources of information are sufficiently complementary that several insights might be developed for an understanding of the reading process. However, few attempts have been made to view reading from this joint perspective.

Reading researchers have often dismissed verbal learning research as too basic to have relevance while reading research, on the other hand, has often been characterized as oriented toward the development of teaching techniques. If the former approach fails to generate practical application, the latter approach fails to offer a sound theoretical base for an understanding of the processes involved in skilled reading behavior.

The members of this symposium, two trained in reading and two trained in verbal learning research, will attempt to outline some of the areas of research on learning by reading implied by the merging of these two disciplines. In so doing, they will review previous research consistent with this orientation and present some preliminary research findings on the process of reading verbal material for meaning.

Dr. Donald J. Cunningham of the Institute for Child Study and Department of Educational Psychology at Indiana University will offer a quasi-theoretical conceptual model for viewing research on reading and verbal learning. This system draws heavily on the information processing models of memory put forth recently by such learning psychologists as Neisser, Bower, and Atkinson and Shiffrin. Representative research in five major areas will be briefly reviewed to illustrate the utility of the model: 1) characteristics of reading material associated with efficient reading, 2) identification of the content of reading materials, 3) the processing strategies correlated with reading for meaning, 4) individual differences in reading and 5) measuring learning outcomes from reading for meaning. The other presenters will elaborate one or another of these areas.

Dr. J. Jaap Tuinman of the Institute for Child Study and Department of Reading at Indiana University will offer some perspectives on the problems associated with measuring comprehension. The validity of an investigation of learning by reading may depend heavily upon the definition of the dependent variable. Thus it becomes clearly important to delineate what is meant by comprehension of verbal materials and what is implied by different measures of comprehension. In his discussion, Dr. Tuinman will pursue methodological and conceptual problems associated with the various measures.

Dr. William E. Blanton of the ERIC Clearinghouse on Reading and Department of Reading at Indiana University will pursue problems associated with the use of "cognitive organizers" in textual materials. Dr. Blanton will summarize the work of Ausubel and others on the use of structured organizers in meaningful reception learning. Dr. Blanton will define problems implicit in the use of Ausubel's model and offer some speculation as to the use of cognitive organizers in reading research.

Dr. Gary M. Ingersoll of the Department of Educational Psychology at Indiana University will discuss the desirability for including individual difference variables in the investigation of learning by reading. As Cronbach, Jensen, and others have noted, far too often the variance accounted for by different aptitudes which interact with the experimental treatments is included in the error term. Dr. Ingersoll will present arguments favoring the use of the aptitude by treatment interaction paradigm in reading research.

Dr. Lawrence T. Frase of the Bell Telephone Laboratories will act as discussant to this symposium. Dr. Frase will be free to react to any or all of the positions presented by the four participants.

DIVISION D: MEASUREMENT AND RESEARCH METHODOLOGY

PAPER SESSIONS

APPLICATIONS OF MONTE CARLO METHODS I

Rational Approximations of the Inverse Gaussian Function

JACKSON A. BYARS and JOHN T. ROSCOE, Kansas State University

There are at least two situations in which the behavioral scientist wishes to transform uniformly distributed data into normally distributed data: (1) Where uniformly distributed pseudo-random numbers are generated but normally distributed numbers are desired, and (2) Where standardization of an instrument requires normally distributed standard scores from percentile ranks. Using Chebyshev polynomials, Hastings has derived two approximations which have been widely used. Burr, using cumulative moment theory, has also derived two approximations, but these have not been widely used. The authors have derived a new and simpler approximation which is more accurate than either Hastings or Burr over the range $p = 0.01$ to 0.99.

A Monte Carlo Investigation of the Analysis of Variance Applied to Non-Independent Bernoulli Variates

JOHN F. DRAPER, CTB/McGraw-Hill

It is noted that some investigators have had success in showing that the Analysis of Variance (ANOVA) is to some extent robust, under certain conditions, when applied to zero-one type data. A repeated measures situation is presented in which it appears desirable to consider zero-one type item response evaluations as dependent variables. Monte Carlo results are reported with respect to the application of ANOVA to data simulated under a model of the above situation, particularly results which indicate when ANOVA is definitely not robust. Implications and suggestions conclude the paper.

An Empirical Comparison of Four Chi-Square and Kolmogorov Models for Testing Goodness of Fit to Normal

HOWARD M. KITTLESON and JOHN T. ROSCOE, Kansas State University

Traditionally, goodness-of-fit to normal has been tested with a chi-square model in which cell limits are defined by dividing a standard score scale into equal parts. Some authors have suggested that cell limits should be defined by dividing the area under the curve into equal parts. Other authors have suggested the use of the Kolmogorov statistic. The investigators used Monte Carlo techniques to compare the validity and power of the chi-square and Kolmogorov tests using both the equal score intervals and equal areas models. Of the four models tested, the chi-square equal areas model proved superior in every respect.

A Comparison of Three Methods of Analyzing Dichotomous Data in a Randomized Block Design

GARRETT K. MANDEVILLE, University of South Carolina

Analysis of variance (ANOVA) techniques are often used when the data obtained in an experiment satisfy the paradigm of the randomized block design. Less assumptive multivariate methods are also available as are nonparametric techniques developed by Friedman (χ^2_r) and Cochran (Q). In this Monte Carlo study three of these analytic techniques (ANOVA, multivariate and Q) are compared when the data are dichotomous. Comparisons of empirical and nominal Type I error and power are given for various success proportions, degrees of dependence among the observations within a block, number of treatments and number of blocks.

The Effects of Pooling the Interaction and Within Components on the Alpha and Power of the Main Effects Test

JOHN T. POHLMANN, Southern Illinois University

The Monte Carlo method was used, and the factors considered were (1) level of main effects in the population; (2) level of interaction effects in the population; (3) alpha level used in determining whether to pool; and (4) number of $\text{d.f.}_{\text{within}}$. The results indicated that when the ratio $\text{d.f.}_{\text{axb}}/\text{d.f.}_{\text{within}}$ was large (¼), pooling resulted in a disturbance in the actual alpha for the main effect test. The magnitude and nature of the disturbance was dependent upon the alpha level employed in testing the interaction effects. The use of an alpha of .25 for the interaction effects resulted in a congruence between actual alpha and nominal alpha, and a slight increase in power.

The Robustness of the Studentized Range Statistic to Violations of the Homogeneity of Variance and Normality Assumptions

GARY C. RAMSEYER and TSE-KIA TCHENG, Illinois State University

Monte Carlo methods were employed to investigate the robustness of the studentized range statistic. For several sample sizes and numbers of groups, sets of 2000 q-values were generated and Type I error rates were determined. Extreme variance ratios of 1:1:4 for normal populations produced error rates up to only 6.9% and 2% for the nominal 5% and 1% levels respectively. Violations of only the normality assumption using exponential and rectangular distributions resulted in rates negligibly below the nominal levels. Simultaneous violations of both assumptions led to maximum rates of 8.2% and 2.9% respectively. It was concluded that q is quite robust.

COMPUTER TESTING

Utilizing the Computer to Assess the Readability of Language Samples

NORMAN A. FELSENTHAL and HELEN FELSENTHAL, Purdue University

This research demonstrates the utilization of a specially developed computer program to facilitate the calculation of eight well-known readability formulas; e.g., Flesch, Dale-Chall, Gunning, and others. Three 100-word samples were selected from each of twenty elementary trade books. The sixty language samples were computer-processed and each yielded eight different readability scores. Correlation techniques compared the similarity or dissimilarity of the eight different readability quotients. Chi-square techniques measured the internal consistency of the readability levels within each book. The study illustrates the feasibility of employing computers to determine the readability level of language samples.

Scoring Creativity Tests by Computer Simulation: A Validation of the Prediction Equations

JOHN F. GREENE, University of Bridgeport; PERRY A. ZIRKEL, University of Connecticut

In recent years several studies have attempted to utilize the computer to simulate human behavior, especially human rating behavior. None of the resulting prediction equations, however, have been validated in other similar populations. Consequently, the objective of this study is to determine the general usefulness of prediction models designed to score creativity tests by computer. The results indicate that certain prediction models are stable and useful, with cross-validated r's ranging from .85 to .89. Other models, however, are deemed relatively unstable as shrinkage approached .40. Restricted and forced prediction models as well as full models are analysed.

Computer Analysis of Cloze Data To Develop a Readability Formula

ROGER ISON, MILTON D. JACOBSON and RAMSAY SELDEN, University of Virginia

Twenty thousand words of Cloze test data were administered to nineteen subjects to determine empirically the readability rate of the text. The text itself was keypunched and analyzed by computer to measure the appearance rate of a number of objective variables of readability. The empirical readability of the text was compared to the appearance rate of the variables to yield a correlation of .8. It was concluded that large volumes of Cloze data could be useful in developing objective measures of readability.

Computer-Generated Verbal Test Reporting

WALTER M. MATHEWS, University of Mississippi

An alternative to traditional test reports will be presented: automated reports that were designed for teachers and parents and that are in a verbal format. These reports were built around the Iowa Tests of Basic Skills and were generated for a random half of the 52 fourth-grade classes in 16 elementary schools in Madison, Wisconsin. The reports were evaluated by comparison to the traditional reports and were rated significantly higher ($\alpha = .01$) on every scale (clear, useful, meaningful, valuable, sufficient, accurate). The experimental reports were also found to have a greater impact on teacher perception of student performance.

Test Homogeneity and Response Stability

THOMAS A. TYLER, Southern Illinois University

Response stability in non-ability tests was studied in a test-retest design as a function of test homogeneity. Items and persons were scaled with the Rasch model and the absolute difference of scale values was used as an index of psychological distance between subject and item. As anticipated small psychological distances were associated with response instability over time.. Also, the predictability of response stability increased as the tests increased in homogeneity. Implications were made for the study of subject-acquiescence, subject-variability, control of acquiescence, item-stability, and general strategies for test construction.

CRITERION-REFERENCED TESTS

Student Evaluation: Toward the Setting of Rational, Criterion-Referenced Performance Standards

JAMES H. BLOCK, University of California, Santa Barbara

This study lays some footings for the development of rational, criterion-referenced, performance standard setting techniques. The differential effects of the maintenance of various criterion-referenced standards on selected cognitive and affective learning criteria are examined. The findings suggest that the maintenance of different standards will maximize student learning depending upon the criteria by which the learning is operationalized. Further, they imply that the commonly observed relationship between individual differences and student achievement often may be a sheer artifact of present instructional practices and, hence, that individual differences may be over-used as a scapegoat for ineffective instruction.

An Index of Efficiency for Fixed-Length Mastery Tests

CHESTER W. HARRIS, University of California, Santa Barbara

A rationale is presented for an index of efficiency of fixed length mastery tests. An ideally functioning mastery test which consists of k items which require the construction of responses can be characterized as a test for which the conventional ANOVA sums of squares for Items and for Items-by-Persons are both zero. A fixed length mastery test which functions in a less than ideal fashion can be characterized by a ratio, varying between zero and unity, that is a function of three sums of squares. The relation of this ratio to the conventional Hoyt reliability coefficient is commented on.

Criterion-Referenced Testing of Inquiry Skills in High School Biology

EUGENIA M. KOOS and JAMES Y. CHAN, Mid-Continent Regional Educational Laboratory

Six Explorations in Biology (simulated investigations for high school students) were tested in junior/senior high and college biology classes in a six-state study of appropriateness of difficulty level for the high-school target group, concurrent validity, range and standard deviations of scores, and class means. Findings were: difficulty level is appropriate to the target group; concurrent validity has not yet been established; intercorrelations of all EIB tests are less than .75, so that no two could be used alone as alternate forms. Intercorrelations of EIB total scores with DAT VR+NR affirms reasoning as major inquiry component.

Toward an Evaluative Methodology for Criterion-Referenced Measures

DAN GILBERT OZENNE, Southwest Regional Laboratory for Educational Research and Development

That traditional test evaluation techniques may be inappropriate for use in the evaluation of criterion-referenced measures has been noted by a number of researchers. This paper presents an evaluative concept, based on the sensitivity of a measure to differences in competency levels, which may be useful in the evaluation of criterion-referenced measures. Various response models are presented which lead to estimates of a test's sensitivity. The topics of item analysis and selection are discussed in relation to each item's contribution to overall test sensitivity. The usefulness of the sensitivity concept is demonstrated through the analysis of empirical and simulation data.

Adapting Criterion-Referenced Measurement to Individualization of Instruction for Handicapped Children: Some Issues and a First Attempt

BARTON B. PROGER, LESTER MANN, ROBERT M. BURGER, and LAWRENCE H. CROSS, Pennsylvania Resources and Information Center for Special Education

Criterion-referenced measurement (CRM) has received increasing attention in regular education. However, it is in education for handicapped children that CRM's flexibility for individualization of both instruction and evaluation become even more fully realized. Research is described on one of the first CRM systems (Individual Achievement Monitoring System: IAMS) ever devised exclusively for the handicapped and designed for widespread implementation. Methodological problems are discussed, such as inappropriateness of item sampling, difficulties in retention testing, and determination of adequate criterion levels of mastery for handicapped children. Flexibility of research findings based on CRM is also examined.

A Strategy for the Evaluation of Individualization

LARRY J. REYNOLDS, University of Pittsburgh

A strategy for the evaluation of individualization was tested for its feasibility. The logic of the evaluation procedure is that a pupil's curriculum placement and his independently measured achievement should have a high degree of correspondence. Correlations were made between reported pupil placement and measured performance on an achievement test. High correlation coefficients were found between the achievement test results and the curriculum placement of the pupils whose classrooms were known to be highly individualized. The coefficients appear to be reliable indexes of individualization. The evaluation procedure should be useful to those interested in either formative or summative evaluation problems.

DATA ANALYSIS TECHNIQUES I

An Empirical Investigation of the Effects of the Violation of the Assumption That the Covariable in Analysis of Covariance is a Fixed Variable

DICK S. CALKINS and EARL JENNINGS, University of Texas, Austin

The mathematical derivation of the statistics used for inference in some linear models assumes that values of the independent variables are pre-selected such that these variables can be treated as fixed rather than random variables. This assumption is often disregarded when these models are utilized in research. This study is an investigation of the consequences of the violation of this assumption. The results of this study indicate that when the sample size is not too small the consequences of the violation of this assumption are of little practical significance.

On the Factor Analysis of Longitudinal Data

A. RALPH HAKSTIAN, University of Alberta

Five models are introduced for the factor analytic treatment of a set of measures obtained for the same sample of persons on two different occasions. The models differ in terms of the assumptions made regarding the constancy of the (1) factor (actually component) score and (2) factor pattern matrices from occasion 1 to 2. Least-squares procedures are developed for the estimation of the component scores and patterns under each model, and illustrative examples using these procedures are presented. The research implications of the hypotheses and procedures associated with each model are discussed.

The Effects on Factor Structure of Several Different Correlation Estimates for Attitude Scale Scores

LAURISTON L. KEOWN and A. RALPH HAKSTIAN, University of Alberta

This study involved an investigation of the use of the Pearson *r*, tetrachoric *r*, phi coefficient, phi/phi-maximum, and Kendall's tau-B coefficient as measures of relationship for the incomplete principal components analysis of simulated Likert-type data based on a known factor pattern and possessing different types of severe departures from normality. The results suggested that Kendall's tau-B was most robust, with respect to distributional distortion, with large or small samples, followed by the Pearson *r*. Phi, phi/phi-maximum, and tetrachoric *r* tended to yield distorted and, in some cases, too many components.

The Accuracy and Stability of Estimated Total-Test Statistics from Unstratified and Stratified Item Samples

DAVID J. KLEINKE, Syracuse University

In a post-mortem study of item sampling, 1,050 examinees were divided into ten groups fifty times. Each time, their papers were scored on four different sets of item samples from a 150-item test of academic aptitude. These samples were selected using (a) unstratified random sampling and stratification on (b) content, (c) difficulty, and (d) both. There were no systematic relationships between method of sampling and accuracy or stability (defined in terms of the means and variances of the distributions of the estimates) of estimated total-test mean or variance. Implications for both generalizability theory and item sampling methodology are discussed.

Rating Dimensions of Course and Instructor Characteristics: The Eye of the Beholder

A. JON MAGOON and J. R. PRICE, University of Delaware

Student ratings of instructional quality are typically expected to reveal the dimensions along which courses and instructors vary when mean rating information on multiple rating characteristics has been intercorrelated. Principal component analyses of 21 sets of rating data based on differences (1) between classrooms, (2) within classrooms, and (3) within classrooms in an unfamiliar context, reveal very similar major dimensions, with congruence approaching .90 for the first two components. It is concluded that such rating information reveals far more about student preconceptions of how rating characteristics are related than it does about meaningful instructional quality dimensions.

The Assumption of a Markoff Chain Model for Interaction Analysis

DEAGELIA M. PENA, Appalachia Educational Laboratory, Inc.

A Likelihood Ratio Criterion based on a two-step Markoff Chain Model was developed for interaction data. At the same time, a simulation based on a one-step chain model produced an empirical distribution of Darwin's criterion which then became the basis of suggesting cut-off points of the chi square values for the rejection of the hypothesis of equality of two interaction matrices. Such rejection would then reflect educational significance. The steps in this investigation were also clearly formulated to allow replication for the extension of the tables which were generated.

EVALUATION TECHNIQUES

Educational Research and the Confidentiality Issue: Methodological Perspectives

ROBERT F. BORUCH, Northwestern University

The paper appraises three kinds of strategies which are useful in maintaining data confidentiality during educational and evaluative research. The first technique involves administrative actions which permit the researcher to obtain information from identified respondents or to merge information from independent sources, without compromising legal constraints against invasion of privacy. Statistical strategies are exemplified by Greenberg's randomized response technique, microaggregation research and reliability models. The techniques permit the researcher to develop estimates of population parameters, using data which can only be associated stochasticly with individuals. Legal strategies are exemplified by model statutes which provide legal protection to the data elicited by a social researcher from a research subject.

A Motion Picture Screening Test for Perceptual Disabilities

ERNEST D. McDANIEL, Purdue University

A motion picture test of perceptual abilities has been developed for use as a screening test with elementary school children. Part I has twenty-five items in which the child must identify a hidden stimulus figure within one of four designs. Part II contains 25 items in which a child must identify from four alternatives a figure formed by three or four separate lines which have been presented successively. The test is a 16mm sound film, is self administering and requires about 30 minutes of total testing time. It is appropriate for use in Grades One through Three.

Identification of Potential Discrepant Achievers When Something Can Be Done About It

JONATHAN J. CURTIS, New Mexico State University

This study was conducted to identify an "optimal" discriminant model for classifying in the first grade potential discrepant achievers with respect to reading achievement. Eleven predictor variables, tapping widely different dimensions, were used. Only three of these were contained in the "optimal" model identified, the Peabody, an "Adjustment" measure, and a "School Anxiety" measure. Discriminant Analysis was found to be a practical technique for identifying discrepant achievers. An independent sample was utilized to cross-validate the findings.

Sibling Methodology in Evaluative Research

DANIEL P. NORTON, Educational Testing Service; RICHARD W. FAUNCE, Minneapolis Public Schools

The development and implementation of innovative educational programs almost always proceeds so the program evaluator cannot apply true experimental methodology to program evaluation. Family, community and school variables are therefore poorly accounted for in many evaluation designs. Sibling methodology can offer advantages to evaluators seeking to control for these variables. A first phase of the application of sibling methodology to a major project in the Minneapolis Public Schools showed no main or first order interaction effects for birth order, sex or variety of program but revealed higher achievement for 343 younger siblings in the new program.

An Evaluation System for a Psychoeducational Treatment Program for Emotionally Disturbed Children

C. J. HUBERTY, University of Georgia; J. P. QUIRK and W. W. SWAN, Rutland Center

A general description of an overall evaluation system which is being implemented in a center for emotionally disturbed children is presented. The complete involvement, in terms of planning, monitoring, and appraising activities and goals of the evaluation component of the center are discussed. The application of the system to the evaluation of direct services to children, which involves five phases (intake, staffing, monitoring, termination, and tracking) including three periodic measurement instruments (employed during the monitoring phase), is discussed. The system provides for periodic feedback of information useful in formulating decisions regarding the individual child and the treatment program.

The Use of Simulation in the Design of a Computer Based Instructional Management System

BURTON J. ROFFMAN and JOHN F. McMANUS, Southwest Regional Laboratory for Educational Research and Development

The IBM General Purpose System Simulator (GPSS) provides a powerful tool for the analysis and differentiation of complex phenomena. GPSS appears particularly applicable to the design of instructional management systems involving the simultaneous interaction of several defined subsystems. For example, the subsystems of the SWRL Instructional Management System (IMS) include a data concentrator, remote optical scanners, and remote output devices, as well as the central processing computer. This paper describes the procedures followed and the problems encountered in performing simulations to design IMS. It includes a description of the functional characteristics of the communication components and details of the various control algorithms evaluated in the course of the simulation studies.

MEASUREMENT MODELS

An Analysis of Personality Data Using Rasch Measurement Model

ERNEST P. FOWLER and WILLIAM J. BRAMBLE, University of Kentucky

A Rasch model anlaysis of variance subtests of the IPAT High School Personality Questionnaire (HSPQ) is presented. The analysis was performed on item response data collected on a sample of five hundred 6-12th grade students in the Louisville Public Schools during September, 1970 and May, 1971. The results and discussion center around the question, "How useful is the Rasch procedure when applied to single scales on a typical personality test?" In answering this question, such things as the fit of the model, discrepant items and stability of the item calibration across two points in time are discussed.

A Study of The Use of Multiple Regression with Dummy Variables to Identify Instructor Contribution to Student Achievement

BARRY GREENBERG and RICARDO MEJIAS, Miami-Dade Junior College

This study examined differences between instructors in their contributions to student achievement. Multiple regression analysis was employed with independent variables consisting of measures of each student's past academic record, the size of the class and a dummy variable to represent the student's instructor. The dependent variable was scores on a Social Science departmental final examination. Results revealed the effectiveness of this approach in isolating and rank ordering each instructor's contribution to student achievement. Obtained regression coefficients for instructors paralleled department chairman ratings. The discussion included a recommendation that colleges take steps to gather more quantifiable student "input" data.

Maximum Likelihood Estimation of Ability under the Normal Ogive Model: A Test of Validity and an Empirical Example

DONALD L. KOLAKOWSKI, University of Connecticut; R. DARRELL BOCK, University of Chicago

A Fortran IV Program has been developed for the maximum likelihood estimation of the parameters of the normal ogive model, with or without guessing constants, by means of a generalized probit analysis. The present paper investigates the bias of the above technique in the recovery of a true score distribution and utilizes this model in an empirical problem requiring a distributional analysis. Using both synthetic and empirical item response data, we find that the presence of a guessing effect requires its corresponding response model and that recovery is excellent if certain extreme cases can be omitted and the possibility of guessing can be ruled out.

A Comparison of Some Nonparametric Tests for Scale

DOUGLAS A. PENFIELD, Rutgers University

The two-sample variance problem is described in detail. When the assumptions underlying the parametric F-test cannot be satisfied, the researcher can select from a variety of nonparametric alternatives to test for scale equality across two populations. In this paper the Siegel-Tukey Test, Mood Test and Normal Scores Test are selected as possible alternatives to the F-test and contrasted with respect to score replacement procedures, computations and power efficiency for specified alternatives. The tests are illustrated and compared for both a small sample study and their large sample approximations to the normal distribution.

Jackknifing Disattenuated Correlations

W. TODD ROGERS, National Assessment of Educational Progress

The jackknife is a general inferential technique intended to ameliorate the problems associated with an inadequate distribution theory. The purpose of this research was to investigate, using computer simulations, the utility of the jackknife for establishing confidence intervals on and testing hypotheses about the disattenuated correlation coefficient. Forty-five combinations of N, $\rho(T_X,T_Y)$, and $\rho(X,X')$ and $\rho(Y,Y')$ were investigated. The results support the claim that the jackknife can be used to set approximate confidence intervals about $\rho(T_X,T_Y)$, thereby communicating a general idea of the precision of the estimate obtained. However, the jackknife should not be used to perform directional hypotheses tests.

MULTIVARIATE METHODS I

On the Extraction of Components and the Applicability of the Factor Model

CHARLES D. DZIUBAN, Florida Technological University; CHESTER W. HARRIS, University of California, Santa Barbara

An example is cited in which Bartlett's Test for Sphericity would not have precluded component analysis with a correlation matrix of ten variables of interest and four random deviates; however the principal component analysis of that matrix using the Kaiser number of components forced an interpretation of random correlations. It is shown that Alpha and Uniqueness Rescaling Factor Analysis, as well as Image component analysis eliminates the problem by yielding as the first factors (components) those correlated essentially zero with the random variables.

The Use of Pattern Analysis for the Prediction of Achievement Criteria

DAVID H. FRIEDMAN, Resource Management Corporation

Linear and nonlinear combinations of variables were used to predict single and multiple criteria for the purpose of improving predictability. Results of the analyses indicated that simple linear combinations of predictors seemed to be the most appropriate model in both conditions. Coupled with other findings, it appeared that single criterion prediction was probably best accomplished using simple linear combinations. For the prediction of multiple criteria, however, it was suggested that a further examination of the model be considered.

A Comparison of Several Methods for Estimating the Number of Factors to Retain in Factor Analysis

VICTOR J. MULLER and A. RALPH HAKSTIAN, University of Alberta

Eight well-known decision rules for deciding on the number of components, common-factors, or image factors (the three models were considered) were applied to correlation matrices taken from the literature, and ranging in size from six variables to 34. The number of factors suggested by each procedure is compared with that from the other techniques, and the effects of sample size and number of variables on these estimates are discussed. Those techniques that tend to suggest too few factors are identified and rejected as misleading. An analysis strategy using two or more of the procedures is presented.

On the Analysis of Partitioned Data

ROBERT M. PRUZEK, State University of New York, Albany; CHARLES A. STEGMAN, University of Pittsburgh

This paper is to describe a new method for studying partitions (disjoint categories of items, objects or stimuli). The method, which is related to Wiley's (1967, *Psychometrika*) latent partition analysis, is in part inferential, for testing hypotheses about structural relations among partitioned items, and in part exploratory, for direct analysis of partitions. The method is discussed in relation to three previously developed methods and is applied for the analysis of two sets of partitioned data. Two general descriptive statistics are defined. Their null distributions are deduced for certain special cases of the general model; their inferential and descriptive characteristics are examined.

Choosing a Design Matrix for the General Linear Model: ANOVA

GERALD J. SCHLUCK, Florida State University

In the general linear model approach to analysis of variance, the model $Y = \mu + G$ is replaced by the model $Y = X\beta + G$. Since either X or β may be chosen by the experimenter, an infinite number of design matrices exist. Investigation of four choices of design matrix (identity, many-one, orthogonal contrast and standard anova) is performed for two common analysis of variance situations. The situations are: one-way analysis with unequal sample sizes; two x three factorial design with unequal sample sizes. Comparative remarks are made about interpretability, distribution of estimates and tests of hypothesis.

An Application of Statistical Inference to the Factorial Invariance Problem

ERNEST N. SKAKUN, T. O. MAGUIRE and A. R. HAKSTIAN, University of Alberta

Attention has been drawn to a weakness in comparative factor analysis. This weakness is due to the absence of standards for evaluating the degree of goodness of fit of two factor patterns. An empirical sampling distribution of the statistic average trace ($E'E$) as E is obtained in the orthogonal Procrustes problem for various orders of A matrices was developed through a Monte Carlo approach. Percentile values of the statistic were computed and can be used as guidelines in determining the difference or congruence of factor patterns obtained from two data sets.

MULTIVARIATE METHODS II

An Empirical Comparison of Three Indices of Variable Contribution in Multiple Group Discriminant Analysis

CARL J. HUBERTY, University of Georgia; PAUL J. BLOMMERS, University of Iowa

This paper is concerned with the comparison of three proposed indices of predictor variable potency: (1) the scaled weights of the first Fisher-type discriminant function, (2) the total group estimates of the correlations between each predictor variable and the first Fisher-type function, and (3) the within-groups estimates of the correlations between each predictor variable and the first Fisher-type function. It was found that given a single run of an experiment none of the indices were sufficiently reliable to be of great practical value in identifying potent variables except when the total sample size was very large.

An Investigation of the Robustness of Covariance Structure Analysis

WILLIAM J. BRAMBLE and ROBERT H. BROWN, University of Kentucky

The robustness of the estimation procedures and hypotheses tests for a class of covariance structure models is investigated by systematically violating the assumption of multivariate normality. The models considered are special cases of the general model $\Sigma = \Lambda \Phi \Lambda' + \Psi$ in which Λ is completely specified. Estimation and hypotheses testing procedures are applied to sample covariance matrices with known underlying structure. The sample covariance matrices are computed from generated data of the following types: (1) multivariate normal; (2) otherwise multivariate normal, but including ten percent or twenty percent outliers; and (3) multivariate gamma with one, ten, or thirty degrees of freedom.

The Use of Contrast Coding to Simplify ANOVA and ANOCVA Procedures in Multiple Linear Regression

ERNEST L. LEWIS and JOHN T. MOUW, Southern Illinois University

The major purpose of this paper was to present and discuss "contrast coding" procedures in handling ANOVA and ANOCVA designs in multiple linear regression. Coding predictor vectors so that they reflect a set of orthogonal contrasts among cell means was found to simplify the procedure and to yield more specific answers to possible research questions. A lack of independence between a contrast vector and the covariate in ANOCVA was found to lead to a possible biasing of the F-test but a minor modification in the procedure was found to solve the problem.

A Two Group-Two Treatment Research Design

JAMES W. MAXEY, Georgia State University

This presentation will focus on the discussion and illustration of a unique two group-two treatment research design. This design allows the assessment of the individual and combined effects of the two treatments as well as allowing for each group to serve as its own control group. In addition, the design provides for internal replication of the experiment. An example will be included in the presentation, showing how this design was used for the evaluation of an in-service training project. Also, several suggestions will be made regarding the appropriate techniques to analyse the data collected for use of this research design.

Multivariate Analog of Hays ω^2

DARSHAN SACHDEVA, University of California, Berkeley

The multivariate analog of Hays ω^2 for estimating the strength of the relationship in the multivariate analysis of variance is proposed in this paper. The multivariate ω^2 (denoted by ω^2_{mult}) is obtained through the use of Wilks' Λ test criterion. Application of ω^2_{mult} to a numerical example is provided so as to help understand the mechanics of the formulas necessary for the computation of ω^2_{mult}.

Use of the Analysis of Covariance Structures to Explore the Issue of Correlated Versus Uncorrelated Latent Random Variables

WILLIAM H. SCHMIDT, Michigan State University

The analysis of covariance structures procedures were employed to examine the issue of correlated versus uncorrelated latent random variables in six sets of empirically generated data. Also explored were the hypotheses of homogeneous error variances and the need for scale factors in the mixed model. The data were generated from learning trial experiments and psychometric applications. The results suggested that Scheffé's criticism is generally warranted, i.e., the specification of uncorrelated latent random variables does not seem to be realistic for most behavioral data. This implies the inadequacy of the traditional specification of the mixed model for the analysis of variance.

OBSERVATION SYSTEMS

Causal Models in Educational Research

JAMES G. ANDERSON, Purdue University; FRANCIS B. EVANS, University of Wisconsin, Green Bay

The major objective of this paper is to explore the utility of causal models in educational research. Data concerning child rearing practices, achievement motivation, and achievement among a sample of 89 Mexican-American and 39 Anglo-Americans in the junior high schools of a southwestern community have been used to illustrate the potential of this model building procedure for providing a powerful means of interpreting statistical relationships based on educational theory. A causal structure involving relationships hypothesized as existing among the set of variables found to be related to achievement has been specified. Algorithms are provided that permit the definition of a set of structural equations and the estimation of model parameters.

Process Evaluation Via an Observation Device

KATHERINE A. BEMIS and MAX LUFT, Southwestern Cooperative Educational Laboratory

The Southwestern Cooperative Educational Laboratory has developed an observation schedule to allow program evaluators to monitor teaching techniques. Through a series of revisions based upon statistical analysis an increasing correlation with student gain has been achieved. The schedule has been used by 300 teachers in a six state area during the 1969-70, 1970-71, and 1971-72 school years. Post observation conferences held with the teachers insure increasing goal directed behavior and decrease random behavior by the teacher.

Relationship of High-Inference and Low-Inference Observation Measures

BARAK ROSENSHINE, University of Illinois; PHILIP LIMBACHER, Texas A and M University

Student ratings of teacher behavior, and observer category system counts for the same 17 teachers were obtained on two occasions—at the start and at the end of the student teaching period. Consistent correlations between the two measures were not obtained across the two periods. The lack of replicated correlations may be due to the instruments: the rating scale was open, whereas a category system is ipsative. Consequently, the results of studies in which student ratings and behavior counts on only one occasion were correlated need to be reconsidered because of the different scales of the two instruments.

An Attempt to Modify the Teaching Behavior of Elementary School Interns Through the Use of a Theoretical Planning Model

A. EDWARD UPRICHARD, RICHARD BEDICS and LEON GREABELL, University of South Florida

The present study was designed to evaluate the efficiency of a theoretical planning model, FACT, in modifying the teaching behavior of elementary school interns. FACT is designed explicitly to identify, examine, classify, and/or quantify the learning stimuli that are available to the learner in a given teaching-learning situation. The experimental treatment comprised approximately two hours of instruction; one hour to present and discuss the theoretical implications of FACT and the second hour trying to bridge the gap between theory and practice. The dependent variable was the number of different stimuli used by an intern in a given teaching segment. Results are presented.

PROBLEMS OF EVALUATION IN URBAN ENVIRONMENTS

Planning School Desegregation

EMMETT B. KEELER, The Rand Corporation

This paper describes the mathematical models and data handling procedures we have developed to help large metropolitan areas plan school desegregation. The methodology was checked by constructing a variety of sample plans for Los Angeles. We discuss how racial balance might be measured, how bussing costs, financial and psychic, can be approximated, and how schools and children should be aggregated into regions to facilitate the analysis. Applying linear programming techniques, we present some sample plans. Finally, we describe how we derived the Los Angeles data, and suggest other data handling procedures.

A Factor Analysis of Several Readiness Measures for Different Socioeconomic and Ethnic Groups

PAULA A. MATUSZEK and THOMAS OAKLAND, University of Texas

A number of readiness tests were administered to groups of first grade children chosen from two socioeconomic (SES) and three ethnic groups. A varimax factor analysis was performed to determine what factors the tests seem to measure and whether these factors differ for children from different SES and ethnic groups. It was found that the tests measured widely differing factors depending on both a child's SES and his ethnic background. Also the tests measured fewer factors than might be expected from the number of subtests, suggesting inefficient test batteries.

Cognitive Modes in a Group of Black Kindergarten Children

SHERLE L. BOONE and LORRAINE M. NICOLICH, Rutgers University

This research investigates the interrelationships of three types of measurement instruments used with nineteen Black kindergarten children. The instruments used were the Harris-Goodenough Draw-A-Man test, measures derived from the Wallach and Kogan designed creativity instruments and the Comtois Early Childhood Rating Scales. It was found that the drawing I.Q. and the creativity instruments are tapping separate modes of cognition in these children, which may be related, to a degree, to general intelligence and creativity. Multivariate analysis of the Comtois scale indicated that there are differences in the classroom behaviors of children which are related to their ranking on the instruments employed.

Personality and Occupational-Interest Correlates of Disadvantaged Students

ANTHONY T. SOARES and LOUISE M. SOARES, University of Bridgeport

Disadvantaged high school males indicated on the Minnesota Vocational Interest Inventory a preference for service-oriented jobs. Disadvantaged females tended toward office work and selling. On the Jr.-Sr. HSPQ form of the IPAT, both groups showed a pattern of personality which can be described as group-dependent, restrained, relatively unfrustrated, self-assured, feeling few obligations, somewhat detached yet self-assured, less oriented to intellectual pursuits, and a tendency toward emotional instability and low-ego strength. The disadvantaged females were significantly differentiated from the males in tough-mindedness and self-reliance. The correlation of these measures was .58, significant at the .01 level.

PROGRAMMING MODELS

Prediction of Teacher Turnover Employing Time Series Analysis

CRIST H. COSTA, Milwaukee Public Schools

The purpose of the study was to combine knowledge of teacher demographic data and time-series analysis to predict teacher turnover. Teacher demographic characteristics were combined for submission to a time-series model developed for use on the computer. Four years of historic data were used as a base upon which to predict the rate of turnover in the fifth year. Four combinations of time-series analysis were employed for every prediction with an accurate prediction defined as an estimate within ten percent of the actual turnover. All four methods seemed equal in predictive ability and overall accuracy was forty percent of all estimates made.

A Linear Programming Model to Optimize Various Objective Functions of a Foundation Type State Support Program

ORVILLE R. MATZKE, University of Iowa

Educators, attempting to provide equal and quality education, are concerned about the rising cost of education. This study formulated a linear programming model to simulate a foundation type program for financing public education. The model was capable of simulating the financial characteristics of the 453 local districts in the State of Iowa. The input data required is a district identification number, assessed valuation and average daily membership. Five objective functions were solved to test the flexibility of the model. Many foundation programs may be computed and evaluated to determine the best alternative in terms of the priorities of the system.

A Simulation Model for Facility Planning for Independent Study Activities in a Flexible Modular Scheduling Program

RICHARD E. MUNSTERMAN, Purdue University

The purpose of this paper is to present a computer simulation model for use by decision makers in educational facility planning. This model can be used to determine the proper space allocations needed for resource facilities in a flexible modular scheduled high school. The sources of data for this simulation model are the Stanford Scheduling Program (SSSS), a student survey of unscheduled time activities, and a Management Information System being developed by the Iowa Educational Information Center. The programming language used for this model was IBM's GPSS/360. A discussion will be presented on various uses of this model for facility planning.

A Linear Programming Model for Assigning Students to Attendance Centers

ROBERT L. ONTJES, Northwest Missouri State College

A linear programming model was developed and tested to assign students to attendance centers. Policies concerning racial balance were used. The input by geographic area requires number of students and number of minority students by grade, and the distance to each school. The input by school requires capacity and allowable percent of minority students by grade. The output includes the percentage of each residential area assigned to each school, the enrollment for each school by grade and the total transportation for the system in pupil-miles. This is an optimal "least-cost" solution.

The Use of Linear Programming for Prediction

CARL J. SCHNITTJER, University of Iowa

The objective of this study was to consider the feasibility of regression analysis using linear programming with a "least absolute difference" criteria as an alternative to the usual "least squares" regression procedures. The two methods of prediction were compared using data on 66 Ph.D. graduates of the University of Iowa. Results were in favor of linear programming over curvi-linear multiple regression. In some cases, in fact, it is possible to obtain a zero sum of residuals using linear programming. Although the model needs further testing, it appears that linear programming offers a viable alternative to multiple regression for solving prediction problems.

STUDIES IN VALIDITY

Comparative Reliabilities and Validities of True-False and Multiple Choice Tests

DAVID A. FRISBIE, Wichita State University; ROBERT L. EBEL, Michigan State University

The purpose of this study was to compare the reliabilities of true-false (TF) and multiple choice (MC) tests and to determine the concurrent validities of TF tests. Two methods, judgmental and discrimination, were devised for objectively converting MC items to TF form. The TF items generated by the two methods from 70-item MC natural science and social studies tests were incorporated in eight final forms which were differentiated by subject matter, conversion method, and item form order. The TF tests were significantly less reliable than the MC tests and did not necessarily measure the same thing as the corresponding MC tests.

Methodology for Instrument Validation: An Application to Attitude Measurement

ROBERT K. GABLE, University of Connecticut; ROBERT M. PRUZEK, State University of New York, Albany

The purposes of this paper were to (1) examine both judgmental and response data gathered for developing an attitude instrument, and (2) discuss general issues related to a proposed methodology for examining content and construct validation. Employing 36 college presidents, latent partition was illustrated as an appropriate technique for examining content validity. Constructs were identified by factoring item response data for 212 college students. A comparison between the item response factors and the LPA categories indicated substantial agreement. Problems with the present interpretations and its advantages over typical methods for content and construct validity were discussed.

Validating Learning Hierarchies for Sequencing Mathematical Tasks

E. RAY PHILLIPS, University of South Florida; ROBERT B. KANE, Purdue University

The purpose of this study was to develop and evaluate indirect procedures for validating learning hierarchies. An initial hierarchy for rational number addition was constructed. A test to assess mastery of each of the 11 levels was administered to elementary school children. The pass-fail relationships were analyzed using seven validation procedures. Programmed lessons for each subtask were sequenced according to each hierarchical ordering generated. The differential effects of sequence upon time to complete the program, achievement, transfer, and retention were investigated. The results indicate that the overall efficiency of the learning process can be affected by sequence manipulation.

Development and Validation of an Observation System for Analyzing Teaching Roles

REBA K. SOUTHWELL, Mississippi State College for Women; JEANINNE N. WEBB, University of Alabama

Two approaches to validation of a classroom observation system are described. A theoretically based 82-sign instrument, Teaching Role Analysis in Childhood Education (TRACE), was validated by making observation records of classroom behaviors of 28 teachers in six selected Follow Through models. As the system discriminated among experimental models, TRACE records were obtained by five trained observers in 40 primary and preschool classrooms. Patterns of teaching behaviors related theoretically to specified roles were clearly identified in both highly structured experimental models and in conventional classrooms; specific behaviors were identified that discriminated among roles. TRACE seemed to be a valid measure theoretically and empirically of teaching role.

STUDIES RELATED TO TESTING PROCEDURES AND CONDITIONS

Racial and Ethnic Bias in Test Construction

DONALD ROSS GREEN, CTB/McGraw-Hill

Publishers of standardized tests ordinarily use "typical" groups of children in tryouts for item selection. This is a study about the degree to which the items chosen depend on the characteristics of the tryout groups. The responses of seven different groups of children in three sections of the country were used to select the "best" half of the items making up the *California Achievement Tests, 1970 Edition.* Four groups of relatively privileged children were compared with one of three disadvantaged groups. Results indicate the use of different groups lead to somewhat different tests measuring somewhat different things.

Implementing a Mixed Program of Criterion and Noncriterion-Referenced Measurement

HAROLD F. RAHMLOW, American College of Life Underwriters

For established educational programs there is the need for a careful reassessment of associated measurement programs to determine whether or not they are meeting their objectives. This paper summarizes some activity that is taking place to introduce the concept of criterion-referenced measurement to a program that has not been criterion-referenced. Introduction of criterion-referenced measurement has moved the American College of Life Underwriters measurement activities from a noncriterion-referenced into a mixed mode. One of the strong forces which influenced this move toward criterion-referenced measurement was a need to document progress in improving instructional materials.

Testers' Influence on Children's Intellectual Performance

JAMES E. SAVAGE, JR. and NORMAN D. BOWERS, Northwestern University

This experiment provided information for optimizing the test-taking environment. Ten black and ten white testers tested 240 students randomly selected on the basis of race, school type, and grade level. Utilizing a 2 x 2 x 3 factoral design and two intellectual tasks multivariate analysis of variance indicated: 1) Blacks performed significantly higher on one task with the same-race testers, and 2) The significant tester-racial effect was not mediated by school type or grade level, but it was mediated by the nature of the task. The findings were interpreted vis-a-vis an anxiety hypothesis (Yerkes-Dodson Law), amount of verbal interaction and type of feedback.

A Replication and an Example of Serendipity in Educational Research

T. SALVATORE TOCCO, University of South Florida; CHARLES M. BRIDGES, JR., University of Florida

A replication of a past study (Tocco and Bridges, 1971) presented at AERA was conducted. Self-concept measures were collected on 1,004 deprived mothers and their children. Canonical analyses re-substantiated that self-concept measures of mothers are related to self-concept measures of their children [$R = .32$, $p < .05$]; and that beginning of school year self-concept measures of mothers are related to change scores of their children over the school year [$R = .26$, $p < .05$]. A non-hypothesized relationship between beginning of school year self-concept measures of mothers and end of school year self-concept measures of children [$R = .66$, $p < .001$] was established serendipitously.

TEST CONSTRUCTION II

A Validity Study of the Self-Esteem Inventory

H. JOHN LANDIS, Pennsylvania Department of Education

The purpose of this study was to indicate the construct validity of Coopersmith's Self-Esteem Inventory (SEI) at the seventh grade level. The validation procedures used were (1) to determine if a difference existed between high and low achievers on the SEI and (2) to determine if there was a significant correlation between the four factors and total score of the SEI and the four factors and total score of the Self-Concept as a Learner Scale (SCAL). Significant differences ($p < .01$) were found between high and low achievers on three factors of the SEI and the total score. Significant positive correlations ($p < .01$) were found between two factors and total scores of the SEI and SCAL.

Model for Use of Sociometry to Validate Attitude Measures

THOMAS P. McGUINESS and PEGGY L. STANK, Pennsylvania Department of Education

A 32-item instrument measuring a student's attitude toward people who differ from himself on the dimensions of race, religion, SES, IQ and physical characteristics was constructed utilizing a Likert scale. A sociometric instrument was used to validate the attitude measure. The hypergeometric distribution was used to compute varying probabilities of choice combinations occurring by chance on the sociometric measure, and any observed choice combination with a probability greater than .05 was accepted as evidence of the presence of bias relevant to the specific variables being considered. Likert t's, indices of discrimination, were found to be significant for all items. A reliability of .732 was identified.

The Development of an Experimental Sensory-Motor and Movement Skills Test Battery

RUSSEL E. ORPET, California State College, Long Beach

The purpose of this project was to develop an experimental test battery that would be useful as a research instrument to assess the movement skills of elementary school age children. The major theoretical basis for this project was the factor analytic studies of movement. The experimental test battery consists of 12 subtests which require approximately 20 minutes to be individually administered. The test battery was administered to 744 caucasian public school children of six to twelve-years of age. Reliability estimates based upon test-retest r's ranged from .43 to .87 with a median reliability coefficient of .79. The test battery correlated .34 with reading achievement at Grade I.

Use of the Semantic Differential in Describing a Pre-School Environment

THERESA R. RAPER and JOHN L. WASIK, North Carolina State University

Teachers and assistant teachers ($N = 32$) from two rural counties in North Carolina rated five pre-school educational settings and one hypothesized ideal setting using a semantic differential in order to determine if the semantic differential could be used to reliably differentiate between pre-school educational environments. Five discrepancy scores (i.e., setting—ideal) for each semantic attribute were analyzed by a $2 \times 2 \times 5$ complete factorial multivariate analysis of variance. It was concluded that the semantic differential did provide a basis for interpreting differences in perceptual attributes of educational settings and that these differences were related to the prior background of the subjects and data gathering environment.

TEST CONSTRUCTION III

The Generation Item Hierarchies by an Ordering-Theoretic Method and a Piagetian Example

WILLIAM M. BART, University of Minnesota; PETER W. AIRASIAN, Boston College

In this study an ordering-theoretic method to generate item hierarchies is explicated and an empirical example is provided as a hierarchy among a set of Piagetian test items is generated. The data analytic method emanates from ordering theory which is a boolean algebraic measurement model. The method to be discussed requires bivalent items as are the Piagetian tasks with Genevan protocols being used. To exemplify the method, the response patterns obtained from the Piagetian tasks administered to Minneapolis-area students are analyzed with the procedure. This method can be used to generate a hierarchy among any set of items.

Relationships Between Objective Test Formats

JOHN FOLLMAN, BRUCE HALL, RUSSELL WILEY and JANICE RODGERS, University of South Florida

The objective of this study was to attempt to determine if the respective actual factor structures of four hypothesized different test formats, i.e., Fill in the Blanks, Matching, Multiple Choice, and True False, actually were different. An item having the same content was made for each of the four formats. Factor analysis of the 86×86 inter-item phi matrix of the combined Matching, Multiple Choice, and True False formats indicated 34 small factors made up of weak item loadings from all three formats. It was concluded that there is no evidence that the hypothesized different types of tests actually differ.

The Efficiency Index in Item Analysis

RICHARD J. HOFMANN, Miami University (Ohio)

In this paper a new item analysis index, *e*, is derived as a function of difficulty and discrimination to represent item efficiency. Inasmuch as item discrimination in this paper is not independent of item difficulty it is demonstrated algebraically that the maximum discriminating power of an item may be determined from its difficulty. Item efficiency is defined as the ratio of observed discrimination to maximum discrimination.

The *e*-index will range from zero to unity and will provide additional information for item analyses. Its probability interpretations may provide an attractive psychometric criterion for the retention or rejection of items.

To Change or Not to Change Item Responses When Taking Tests: Empirical Evidence for Test Takers

DANIEL O. LYNCH and BILLIE C. SMITH, Wisconsin State University, Oshkosh

The response changing behavior of 168 students on their final exams showed that response changes based on reasoned consideration of test items tend to raise test scores. With wrong-to-wrong response shifts ignored, 68% of the residual shifts were from wrong-to-right and 32% were from right-to-wrong. The authors conclude that many students have been led astray by professors and peers advising them not to change their first answer choices.

Passing Scores and Test Lengths for Domain-Referenced Measures

JASON MILLMAN, Cornell University

Suggestions are offered for establishing standards and determining the number of items needed in criterion-referenced measures. The discussion of setting a passing score is organized around four factors: item content, educational consequences, psychological and financial costs, and measurement error. Tables relating test length to proficiency standard and required accuracy are provided. Other schemes for setting standards and arriving at test length are evaluated.

Comparative Reliabilities of the Multiple Choice and True-False Formats

ALBERT C. OOSTERHOF and DOUGLAS R. GLASNAPP, University of Kansas

The present study was initiated to investigate the comparability of multiple choice and true-false item formats when the time necessary to respond to each type of item was equated empirically. Also investigated was the relative difficulty of multiple choice (MC), true true-false (Tf), and false true-false (tF) items measuring the same content. Results indicated that true-false items result in a less reliable test than one using a four-option MC format, even when empirically determined differences in time needed to answer the respective formats were taken into account. When scores were corrected for guessing, the MC items were significantly easier than the true-false format.

TEST CONSTRUCTION IV

Attitude Toward School and Learning: The Development of a Seventh Grade Instrument for Measurement of Goal IV of the Pennsylvania Quality Assessment Program

GEORGE E. BREHMAN, JR., Pennsylvania Department of Education

Previously developed Pennsylvania Educational Quality Assessment instruments for measurement of attitudes toward school and school learning were examined with the intent of creating an improved seventh-grade version of the instruments which are now used at the fifth and eleventh grade levels. Items designed to measure new factors or attitudes independent of school context were constructed, as well as items that might improve measurement of previously identified factors. Data analysis replicated an earlier finding of three factors and also permitted adding test items designed to measure a possible "out-of-school" factor or to more reliably measure the original factors.

Development of an Instrument to Assess Attitudes of High School Students in Compensatory Programs

MARIAN T. KILBANE, Cleveland Public Schools

This paper describes the development of the Survey of Pupil Opinion, an attitude-assessment instrument adapted to the reading and "palatability" levels of high school students in compensatory programs. Preliminary testing reduced the initial pool of 100 items to an instrument of thirty items. Factor analysis revealed three item clusters, designated "social participation" (seven items), "perception of teachers" (nine items), and "self as student" (eight items). Test-retest reliability was r = .71. Survey data from tenth-grade students in a Title I program indicated that the instrument differentiated among student groups and showed promise as a tool in identifying dropout-prone students.

The Wisconsin Test of Adult Basic Education

TEJ N. PANDEY, University of Wisconsin

The Wisconsin Test of Adult Basic Education (WITABE) is an achievement instrument designed for evaluating remedial education programs for functionally illiterate adults. It is divided into 3 subtests—communication, computational and coping skills. The items in the coping skills subtest are in unconventional mode geared specifically to testing illiterate adults. Content selection is based on the behavioral objectives of the Rural Family Development (RFD) Program at the University of Wisconsin. Hoyt reliability is estimated for each subtest and the total test. Establishing concurrent validity with the simultaneous administration of ABLE and TABE, and grade equivalency norm study is under progress.

An Analysis of Age, Ethnic, and Social Class Factors In A New Measure of Logical Thinking

DAVID C. RAND, JOHN O. TOWLER, and JOHN F. FELDHUSEN, Purdue University

A new test of logical thinking abilities based on Piagetian theory was developed and administered to 1200 elementary school subjects of varying ages, ethnic backgrounds, and socioeconomic status. The test was administered through the use of a color movie presentation with a synchronized audio tape. Analysis of the results indicated that a new, reliable, and relatively "culture free" test had been developed, and that this test did not correlate highly with traditional measures of intelligence or school achievement. The results also indicate that this use of cinepsychometrics was a practical alternative to individual or clinical testing programs.

The Development and Evaluation of a Test to Measure Occupational Awareness

FRANCIS J. REARDON, JOHN K. S. SENIER and JAMES P. LEWIS, Pennsylvania State Department of Education

A short test of occupational awareness was developed in order to assess the junior high school student's awareness of the world of work. There were three steps in the test development. First, a large pool of items was developed, using information from the Dictionary of Occupational Titles. Following this, a panel of experts analyzed the item pool and gave several suggestions. Finally, a test was assembled and put through two phases of field testing. The final phase of field testing, using the actual instrument, revealed a reliability of .828. No floor or ceiling effects were found. The test correlates well with a measure of vocational maturity as well as other measures of student performance.

An Application of Item-Examinee Sampling to Scaling Attitudes

DAVID M. SHOEMAKER, Southwest Regional Laboratory for Educational Research and Development

The post mortem item-examinee sampling investigation described herein explored the feasibility of using item-examinee sampling to estimate scale values denoting degree of affect toward stimuli when measured by the method of paired-comparisons. Results indicate clearly that such scale values can be approximated satisfactorily through item-examinee sampling. Defining one observation as the response made by one examinee to one item, the similarity between the estimated scale values and normative scale values increased generally with increases in the number of observations acquired by the sampling plan.

TESTING PROCEDURES

A Mastery-Learning Test Model

RONALD BESEL, Southwest Regional Laboratory for Educational Research and Development

A test model for analyzing criterion-referenced test data is derived. All individuals tested are assumed to be in either the mastery or the nonmastery states. Bayes formula is used to compute state probabilities. Methods for estimating prior probabilities are described. Two statistics or "decision variables" are computed: probability of mastery for an individual and proportion in mastery for an instructional group. The relationship between two tests is represented as an adjustment matrix. The interpretation of adjustment matrices in terms of instructional effectiveness and the validation of learning hierarchies is discussed.

Methodological Variables in the Study of Field Dependent Behavior of Young Children

JOHN CHRISTIAN BUSCH and LAWRENCE H. SIMON, University of North Carolina, Greensboro

The field dependence construct has generated a great deal of psychological research interest, however little methodological data are available on the rod and frame performance of young children. 70 *Ss*, ages 5, 6, 7 years, were administered the rod and frame. This was later readministered with the Lorge Thorndike Intelligence Test. Performance on the second rod and frame appeared to follow predicted developmental differences; split-half and test-retest reliabilities were significant and ranged from marginally adequate to very high; there appeared to be only a low and negligible correlation with intelligence.

Cognitive Style and Creative Problem-Solving

LEON HYER, Lehigh University; T. JEROME ROOKEY, Pennsylvania Department of Education

In recent years three cognitive styles (Response Tempo, Response Style and Response Ambiguity) have been related to certain types of problem-solving. This investigation examined the relationships of the three cognitive styles to creative problem-solving. Using zero-order correlation coefficients it was found that Response Ambiguity related significantly to both measures of creativity, Response Tempo related significantly but negatively to creativity measure, and Response Style related to neither measure. A series of multiple regression analyses confirmed that Response Ambiguity accounted for the majority of the explained variance with Response Tempo minimally contributing and Response Style ineffective.

Construct Validity of Creativity

RICHARD E. STAFFORD, State University of New York, Oneonta; WILLIAM F. BROWNE, Ohio State University

A self report questionnaire based on a layman's concept of creativity was administered to 166 male and female college students along with variables of convergent thinking, divergent production, perceptual speed and reaction time. All tests were intercorrelated and factor analyzed by principal components method. Four orthogonal factors emerged: I—convergent thinking, II—originality production, III—creative fluency, and IV—drive. The self report questionnaire loaded on factor III giving construct validity to this aspect of creativity. Sex differences are discussed.

SYMPOSIA

ALTERNATIVE PROCEDURES WITH OBJECTIVE TESTS: AN EXAMINATION OF THREE STRATEGIES

STANLEY S. JACOBS, University of Pittsburgh, ORGANIZER

Two persistent concerns of measurement specialists, since the widespread use of objective tests began about 40 years ago, have been methods of controlling guessing behavior and of tapping partial knowledge. These two consequences of the objective format and the usual 1-0 scoring rule for correct and incorrect responses have led many to conclude that objective item scores result in a rather crude approximation of person i's position on a latent continuum.

It may be argued, of course, that this concern is another example of being "unable to see the forest because of all the trees," i.e., if one assumes a homogeneous item-set, where the *probability* of a correct response by person i (p_i) is a constant across all K items, then it is a foregone conclusion that one should attend to the test score ($p_i k$) and not individual item scores which cannot equal p_i, except when p_i is 1 or 0. While the foregoing is theoretically true, the fact of the matter seems to be that we do make decisions based on item responses. With the trend toward criterion-referenced measurement, the reliance upon item-scores rather than test-scores may be expected to increase. Also, the "homogeneity characteristic" is a thorny problem, since homogeneity can be only partially attained. Thus far, the complexity of cognitive processes has kept ahead of the item-writer's attempts at developing the statistically and psychologically homogeneous item-set.

The objectives of the symposium included a critical examination of the theoretical and empirical literature surrounding three methods which have been advanced as appropriate for increasing the amount and quality of information obtainable from objective test responses. The methods discussed, participants and paper titles were as follows:

Alfred D. Garvin of the University of Cincinnati will discuss confidence-weighting of item responses in his paper titled "Confidence Weighting."

Robert Rippey of the University of Illinois will discuss the assignment of weights to item options in his paper titled "Simplified Means of Confidence Testing."

Roger Koehler, Ohio University, will discuss item-option elimination (Coombs'-type directions) in his paper, "Coombs'-Type Response Procedures."

Ross Traub, Ontario Institute for Studies in Education and William Angoff, Educational Testing Service, will serve as discussants.

It was concluded that the research evidence bearing on the methods discussed remains incomplete, and is in many instances equivocal. In the case of confidence-weighting, there seems to be some evidence that confidence-weighted item scores are contaminated by individual differences in risk-taking behavior. Despite this apparent threat to validity, a number of studies have shown moderate-to-sizeable gains in estimated reliability. Option-weighting, sometimes referred to as probabilistic testing, remains plagued by the problem of *Ss'* comprehension of the more adequate, sophisticated scoring functions. While Coombs'-type directions are intuitively appealing, there seems little data favoring their usage. Risk-taking behaviors analagous to those which vitiate the "correction-for-guessing" may render obtained data difficult to interpret.

A number of areas remain to be investigated. For example, although a number of writers have recommended training *Ss* in the usage of the more complex scoring rules, to allow the development of optimal personal strategies, little systematic research has been done.

Several newer approaches designed to extract more and better information from objective item responses were discussed.

AN ALTERNATIVE TO A STANDARDIZED TESTING PROGRAM

WALTER M. MATHEWS, University of Mississippi, ORGANIZER

The objective of this symposium is to discuss the problems school systems have with their testing programs, and to present as a model for discussion the approach that was used by the Madison (Wisconsin) Public Schools to redesign their system-wide testing program. Presentations will be made by those people who had responsibilities for the restructuring. They will present for discussion both their successes and their failures—what worked and what did not work.

For many years the Madison Public Schools had operated a fairly traditional standardized testing program. While much data was produced annually it was apparent that there were problems. These included questions concerning (1) the relationship of the tests to the curriculum, (2) proper utilization of the data collected, and (3) ways and means of interpreting the results to parents and students. Because of these concerns, it seemed appropriate to re-evaluate the entire program.

After some initial deliberation it was decided that total involvement by those who use the information from tests was crucial to building a meaningful testing program. In addition, it was decided that restructuring a testing program was an extremely complex task.

In order to satisfy the first requirement, representatives from each of the 35 schools and the various professional staffs of the school system were solicited to work together in developing a total testing program. Elementary, middle, and senior high school teachers, principals, psychologists, guidance counselors, and curriculum department members were formed into the Nucleus Committee for School Testing Specialists.

Recognizing that evaluation is a sophisticated task, leadership for the plan was obtained from Professor T. Anne Cleary of the University of Wisconsin. She structured the plan in such a way that the participants in the program would receive training in measurement as well as guidance in the development of the testing program for the Madison Public Schools.

Mrs. Cleary, now Director of Examinations for the College Entrance Examination Board, will present a paper that will describe the background problems of Madison's standardized testing program, and develop the origin of the Nucleus Testing Committee. The paper was co-authored by Walter M. Mathews, who was the Coordinator of Research and Testing for the Madison Public Schools, and is titled: "The Nucleus Testing Committee."

The first task of the Nucleus Committee was to establish priorities for what should be measured. The Committee surveyed teachers, psychologists, counselors, social workers, and administrators of the school system to find what they needed to know about children in order to provide the best instructional program. Myron Seeman, the Coordinator of Health, Psychological, and Social Services for the Madison Public Schools, will present a description of the survey and the results that were collected from the different response-groups. His presentation is titled: "The Testing Needs—Assessment."

Three types of testing needs emerged from the survey: affective, curriculum-related (or criterion-referenced), and standardized norm-referenced. Sub-committees of the Nucleus Testing Committee were established to investigate each area and to develop specific recommendations on both a short-term and a long-term basis. A discussion of the activities of these three sub-committees and a summary of their recommendations and progress in reference to their recommendations will be presented by the person who coordinated each sub-committee. Aileen Nettleton, a reading consultant for the Madison Public Schools, will present the paper: "Recommendations: Standardized Testing." Peter Christiansen, the Coordinator of Mathematics for the school system, will present a paper titled: "Recommendations: Curriculum-Related Testing." Lee H. Hansen, the Coordinator of Research and Testing, will present the paper: "Recommendations: The Affective Domain."

The administrative problems inherent in a system-wide testing program will be discussed by Carmelo V. Sapone, the Director of Curriculum Development for the Madison Public Schools. He will also talk about the difficulties involved in the elimination of an existing testing program and the institution of the Nucleus Testing Committee. The title of his presentation is: "The Administrative View."

The importance of this symposium is that it takes a long hard look at the traditional school district testing program, and finds it not only inadequate, but dysfunctional. An alternative structure is proposed, and the problems with, and the results from, the implementation of this new structure are presented for discussion.

ANALYSES OF CONCEPT ATTAINMENT ABILITIES

CHESTER W. HARRIS, University of California, Santa Barbara, ORGANIZER

The symposium is designed to describe and present results from a project of the Wisconsin Research and Development Center for Cognitive Learning illustrating strategies for analyzing concept attainment abilities of fifth-grade students. The focus of the project is on developing one or more models of concept attainment abilities that eventually can be used as bases for suggesting instructional experimentation. The symposium describes how the focal problem was analyzed into problems of defining and measuring concept attainment in four subject matter fields at the elementary school level, problems of defining and measuring more general cognitive abilities that are likely to be related to concept attainment in the subject matter fields, and problems of analyzing interrelationships both within and between concept attainment measures and cognitive ability measures. Empirical results based on data for fifth grade boys and girls are used to describe relations among task and content aspects of measures of concept attainment in the four subject matter fields separately, and across fields. These analyses employ several factor analytic techniques, including three-mode analysis. Stability of the results for two different samples of boys and of girls will be commented on. Results for two different samples of boys and of girls are also available for the analyses of measures of more general cognitive abilities; these results add new evidence to questions concerning models for such abilities. Questions of the appropriate techniques for relating results for the concept attainment measures with those for the cognitive ability measures are raised, and the potentiality of inter-battery factor analysis for this purpose is examined.

Mary R. Quilling, Wisconsin Research and Development Center for Cognitive Learning, will present the paper, "Overview of the Concept Attainment Abilities Project, and Discussion of the Problems of Measurement that Arise in Such a Project." Mrs. Quilling will describe the development of items for measuring concept attainment in four subject matter fields. A completely crossed design, consisting of 12 tasks and 30 concepts, was used. The tasks were constant across all subject matters; the concepts differed for the subject matters, and were chosen in a two stage sampling plan. She will also describe the selection and development of cognitive ability tests assumed to be relevant to concept attainment. Models furnished by the work of Guilford, Guttman, and the Thurstones were employed in this selection and construction.

Margaret L. Harris, Wisconsin Research and Development Center for Cognitive Learning will discuss "Task and Content Dimensions of

Concept Attainment Measures for Four Subject Matter Fields." Mrs. Harris will describe results of factor analyses, including both conventional and three-mode procedures, for the concept attainment items of the four subject matter fields. Analyses within a subject matter field will be compared with results of analyses of tasks and concepts across the four fields. The utility of three-mode factor analysis for such applications will be assessed.

Chester W. Harris, University of California, Santa Barbara, will present the paper "Dimensions of Cognitive Abilities." Mr. Harris will describe the use of a "comparable common factor" strategy in the interpretation of factorial data for cognitive abilities, when more than one sample of subjects is available and more than one factorial solution is employed. Results for data gathered for different samples in testing sessions one year apart will be presented.

Chester W. Harris, University of California, Santa Barbara, will discuss "Inter-battery and Canonical Correlation Analysis as Tools for Relating Concept Attainment Measures and Cognitive Ability Measures." Mr. Harris will describe the problem of establishing a model for abilities common to the two types of measures. Canonical correlation analysis and Interbattery Factor Analysis will be compared and assessed for this purpose.

Although the symposium focuses on problems of research strategy in a complicated area, it also reports new data on concept attainment and cognitive abilities; consequently, the symposium should be of value to persons with both methodological and substantive interests. Of special importance is the discussion of: the construction and analysis of test items in a completely crossed design, the application of factor analysis to such tests, the structure of concept attainment across subject matter fields, the use of more than one sample with the "comparable common factor" strategy, the new evidence on questions concerning models for general cognitive abilities, and the problem of developing a structure involving both achievement and ability measures.

Herbert J. Klausmeier of the Wisconsin Research and Development Center for Cognitive Learning will discuss the papers.

THE COLLEGE ENVIRONMENT: VARIATIONS AND CORRELATES

JOHN A. CREAGER, American Council on Education, ORGANIZER

The objectives of this symposium are to present some recent developments, both substantive and methodological, in the study of the college environment. In this area the state of the art has progressed to the point that greater attention is being paid to variations in the environment within single institutions, and to the differential effects of the environment on various kinds of students.

"Some Common and Not so Common Approaches to the Study of College Environments and Their Effects" will be presented by Kenneth A. Feldman, State University of New York, Stony Brook. Some of the theoretical frameworks used (either explicitly or implicitly) in the study of the effects of college environments are analyzed. Areas discussed include (1) the description and measurement of college environments, subenvironments, and individually experienced environments, and (2) the measurement and interpretation of student change and college effects. The emphasis is on the less commonly used theoretical orientations—not only because of their intrinsic worth, but because a discussion of them throws into relief some of the underlying assumptions of the more commonly used approaches.

"Open Admissions and the College Environment" is the topic of Jack E. Rossman, Macalester College. Attitudinal data collected from seniors at three campuses of the City University of New York in the summer of 1971 have been used to examine the impact of the advent of open admissions at CUNY the preceding year. The CUNY students' perceptions of the effect of open admissions on such variables as academic standards, the reputation of a college, and the value of a degree have been analyzed and related to the same data from seniors at various types of non-open admissions institutions.

"Some Correlates of Concern for the Individual Student" will be discussed by Alan E. Bayer and Alexander W. Astin, American Council on Education. Previous research indicates that institutional coldness and impersonality—as manifested by low scores on a student-derived measure of concern for the individual student (CIS), a factor from Astin's analysis of the Inventory of College Activities—has a significant detrimental effect not only on students but also on the institution itself: e.g., depressed degree aspirations, greater attrition, and more frequent and severe incidents of unrest. Each of several sets of variables—measuring aggregate student characteristics, institutional structural characteristics, and aggregate faculty characteristics—prove to have high correlations with CIS. (Using stepwise multiple regression, the obtained *R*s are, respectively, .77, .87, and .84.) Traditional measures of faculty "quality," however, are not positively correlated with CIS. After both student and institutional characteristics are controlled, institutions ranking high on CIS (and therefore, presumably experiencing less campus unrest as well as enhancing their students' aspirations and educational progress) are found not to have a higher than average concentration of Ph.D.s on the faculty, nor more faculty from the nation's "top" graduate schools, nor more faculty who are nationally active in their fields and more "productive" in research.

"The 'New Student' in the Community Colleges" will be presented by Dorothy M. Knoell, California Community Colleges. Community colleges have a history of open admissions, free tuition, comprehensive program offerings, attractiveness to students ineligible for senior institutions, and high attrition at the end of the first year of study (usually resulting from the student's decision to withdraw rather than institutional action). New programs and services with state and federal money are changing the community college environment in ways which will have a lasting effect on all students. Specifically, the already diverse student body is more and more heterogeneous by an influx of the so-called "new students" to higher education, who are changing institutional characteristics and improving overall student performance significantly.

"Variations Among Subgroups in Campus Perceptions" will be discussed by C. Robert Pace, University of California, Los Angeles. The perception of the college environment by college students may well exhibit variations within institutions or types of institutions. These may result either from actual subcultures within an institution or from various kinds of students perceiving their campus environments in different ways. The latter type of variation is summarized and discussed, using data from groups which have administered CUES to various subgroups.

"The Use of Taxonomic Procedures to Identify Both Overall College Effects and Those Effects Which Interact With Student Activity" is the title of a paper by Donald A. Rock, Educational Testing Service. The purpose of this paper is to present a methodological approach which is designed specifically to overcome some of the problems inherent in identifying differential college effects. This technique is multivariate and is particularly relevant to the input-output model with controls on the input. The model affords the simultaneous use of both between college variation as well as within college variation. This approach enables the researcher to: (1) estimate the overall college effect, and (2) identify those types of colleges which interact with student ability. That is, it would seem that certain colleges may show little overall effects yet may do better on the average with low ability students while other types of colleges may do better with high ability inputs. Empirical data from two past studies will be presented comparing the results of this method with the more traditional analysis of covariance approaches. Variations of the method will be discussed with possible applications.

The importance of this symposium lies in the fact that future research on college environments, their effects on students, and interactions with student activity will necessarily build upon these recent substantive and methodological developments.

Nathaniel L. Gage of Stanford University and Robert J. Panos, National Computer Systems, will discuss these papers.

COMPUTER ANALYSIS OF STUDENT WRITING: PROGRESS IN STYLE AND CONTENT

ELLIS B. PAGE, University of Connecticut, ORGANIZER

Since 1965 a few workers in educational research have been investigating the possibility of computer analysis of student prose: a field which ties together many theoretical and applied disciplines, and which promises some eventual major changes in school practice. Early work was largely actuarial in method, but achieved some startling similarity to human judgments through the use of multiple regression. Since then, workers have aimed at further understanding style, from a statistical point-of-view, and at deepening the relationship to more abstract work going on in computational linguistics, computer science, and artificial intelligence. This symposium presents methods and findings from very recent work done from several perspectives, treating both the surface structure of prose and the "meaning" behind the words.

The Symposium Chairman, Dr. Ellis B. Page, is Professor of Educational Psychology at the University of Connecticut, and has been since late 1964 the director of the Connecticut research projects in electronic essay grading.

The first speaker, Dr. Henry B. Slotnick, is Assistant to the Director of Research and Analysis for the National Assessment of Educational Progress, Denver. Dr. Slotnick, who did his doctoral work in computer essay analysis, has continued to probe the important variables in prose between the "proxes" of the computer counts and the "trins" of the deeper human variables. He has therefore investigated the "general qualities" which defensibly draw together the computer variables into meaningful, and surprisingly orthogonal, factors. The importance of such factors is discussed for the theoretical advancement of the work. His paper is titled, "Factors and General Qualities in Student Writing."

The second speaker, Dr. Thomas R. Knapp, is Professor of Education at the University of Rochester. He has analyzed certain National Assessment data for the influence of hand-writing in essay evaluation. But most recently, he has conducted large-scale experiments, assigning students randomly to three different topics (self, school, society) and to three different modes (narrative, descriptive, argumentative). His computer analysis of these effects provides new knowledge about how individuals may adjust their prose to changes in purpose. His paper is titled, "Essay Topics and Modes and their Effects on Student Prose."

The third speaker, Peter I. Tillett, is currently on leave from his post as Director of Data Processing for the educational system of South Australia, and is Research Assistant to the USOE-supported research in essay analysis at the University of Connecticut. This work has taken samples of student essays from three different secondary levels, and from five different subject-matter areas, to explore the possibilities of evaluating student knowledge, as displayed in test answers. The research design aims at some large strategic generalities in such evaluation. His paper is titled, "Evaluating Student Essay Tests in Many Classrooms and Subjects."

The discussant, Dr. William E. Coffman, is Lindquist Professor of Educational Research at the University of Iowa, and Director of the Iowa Testing Program, and current President of NCME. He is also recent author of the comprehensive review of "Essay Examinations" in the Thorndike edition of *Educational Measurement.* Thus his perspective is fresh, informed, and broad.

While professional costs in teaching are rising rapidly, computer costs per operation continue to drop at a still more dramatic rate. And technical advances in computer science make natural-language processing still more feasible with each passing year. Eventually, computers should share much of the burden of correcting student writing, and it is important that researchers be aware of both the promise and the problems of the work.

DATA ANALYSIS OF THE 1970 ELEMENTARY SURVEY OF COMPENSATORY EDUCATION

JIM C. FORTUNE, University of Massachusetts, ORGANIZER

During the past year, the analysis of the data acquired on the 1970 Elementary Survey of Compensatory Education has been conducted. Data was gathered from second-, fourth-, and sixth-grade pupils, teachers, principals, and school districts for both Title I and non-Title I pupils and school districts.

The objectives of the Title I symposium are multiple: (1) to demonstrate the historic and elementary aspects of Title I analysis; (2) to report on the 1970 Title I analysis the changes that were made and results which occurred; (3) to discuss the methodological consideration given to Title I analysis and what future consideration should be given.

"Five Years of Title I Federal Evaluation" will be presented by Kathryn A. Hecht, University of Massachusetts. The paper will consist of a description of Title I evaluation from an historic perspective, looking at information sources, developing methodology, feedback utilization and other continuing issues.

"1970 Data Collection" will be presented by Nancy Bradley, Bureau of Elementary and Secondary Education, U. S. Office of Education. The paper will describe the development of the 1970 Elementary School Survey: technical design, external constraints, internal needs.

"Variable Conceptualization: A New Route to Policy Questions" will be presented by Elizabeth Proper, University of Massachusetts. A description of the interactive processes involved in the development of policy questions, the utilization of questionnaire information, and variable conceptualization will be given.

"Development of Software" will be discussed by Stephen Edberg, Fredrick deFriesse, and Michael Hagerty, University of Massachusetts. A report on the development of the computer programs which were employed in the data analysis will be made.

"Cross-Tabulation Interpretation and What Resulted," Anthony Comunale, Southern Connecticut State College. This paper is a report on how the cross-tabulation tables were interpreted by the data analysis staff and how information was fed to USOE, including a report on some of the major variables that were examined.

"USOE's Use of Results," Joe Conner, Bureau of Elementary and Secondary Education, U. S. Office of Education. This paper will discuss bridging the gap between hypothesis and policy in legislative and administrative planning and action.

"A Critique of Federal Evaluative Methodology: A Review of What Was Done Compared to What Should Be Done" will be presented by Thomas Hutchinson, University of Massachusetts. This paper will present a discussion of methodology as it relates to Title I evaluation. The following issues will be emphasized: purpose, implications or purpose for methodology, decision-maker validity, and identification of evaluative variables.

Since the Title I data analysis constitutes a major evaluative project, it reflects the continuing application of methodology. Since federal evaluation practices represent concerns of national importance, the papers given at this symposium should be of wide interest. Leonard Cahen, Educational Testing Service, Daniel Antonopolos, U. S. Office of Education and David Berliner, Farwest Laboratory for Educational Research and Development, will discuss these papers.

DESIGN METHODOLOGY

DANIEL P. ANTONOPOLOS, U. S. Office of Education, ORGANIZER

"The Need for a Design Methodology, an Overview" will be presented by Daniel P. Antonopolos, U. S. Office of Education.

A methodology other than that used for research may be more appropriate for educational engineering and development projects and programs. This symposium compares the purposes and methodologies of research and of design and concludes that while their purposes are different, their current methodologies are the same, calling attention to the need for new design methodological strategies.

The research or scientific methodology with analysis as its hallmark is demonstrated in this symposium as more often restricting the effectiveness of a design solution. To achieve an effective design solution, a methodology distinctly different from the research methodology is advocated, theoretically identified, and illustrated in terms of new empirical applications as an example of a design methodological option.

Reporting on design methodology developed by Gerald Nadler, Professor of Engineering, University of Wisconsin, and research including studies which attempted to delineate the actual strategies used by outstanding professionals in various fields, the papers call attention to the finding that such experts although in different fields have strong similarities in steps of the stragegy each used. The application of a ten-step design strategy utilizing function determination and ideal systems development as hallmarks are represented as one approach showing better results than some conventional strategies based on research methodology. This new design strategy, its explication, application in the physical and social sciences, and implications for training requirements of "designers", "developers", "evaluators", and others, are presented and discussed in this symposium.

"The Ideals Systems Concepts" will be presented by Gerald Nadler, University of Wisconsin. Research on how to do research and how to design is a growing endeavor all over the world. The total range of specific fields which contribute to or deter research and design involves psychological, sociological and organizational factors as well as available educational, economic, and natural resources.

Designing, the art of making plans, structuring patterns or models is often the way useful results are obtained using the knowledge, laws, and theories developed from research. More precisely, design is the multi-dimensional (physical, state, control, interface and rate) specifications of the precise conditions for each of the characteristics (functions, inputs, outputs, sequence, environment, catalysts and human agents) of a system.

Research has a well founded approach or methodology. This is not the case for engineering, developing or designing. When a step by step approach for design is taught, the research methodology is generally given. This in effect assumes that the same approach is desirable for both purposes.

In the briefest format, the research approach has the steps of observation and/or a library search, hypotheses, experimentation and conclusion. This plan of attack has analysis as its hallmark.

The engineering or design approach when made explicit, is almost identical: (a) identify the problem for which a single system or product is required; (b) subdivide the problem into its components to uncover any new elements of the problem which would alter the design specifications; (d) recombine the components into the desired system or product.

The steps vary slightly in texts on engineering, in design or solution oriented fields like operations research, management science, systems engineering, architecture, and others concerned with a specific answer or solution for a specific problem.

Although different words may be used the design steps or process suggested are called the "scientific method" or "problem solving method."

What is surprising about the sameness in the research and design methodologies is that while their purposes are different, the two approaches have been historically treated as one.

This paper deals with an alternative option for design methodology called the Ideals System Concepts.

IDEALS, an acronym for ideal design of effective and logical systems includes three basic ideas: a prescriptive, universal definition of system, an effective strategy for design, and a program for continuing systems design and improvement in any organization. By definition the Ideas Concept is a design strategy and organized program applicable to present and contemplated systems for the purpose of formulating the most effective system for achieving a set of desired functions.

A system is defined and described in this presentation as the specified and organized conditions for the elements of function, inputs, outputs, sequence, environment, physical catalysts, and human agents, detailed in physical, rate, control, interface and state dimensions. The interrelationships of the above are represented as giving structure to a design matrix and the strategies for representing boundaries or the solution space of a problem, project, subsystem or system are discussed in detail.

"Applications of the Ideals Systems Concept Design Methodology" will be discussed by James T. Johnston, Apollo V and Ideals Systems, Inc. The applications of the Ideals System Concept in a variety of problems and settings will be described and discussed. Included are the curriculum design and development of a New College; designing and structuring a government educational research program, and the design of the University of Wisconsin Medical Center.

"Design Methodology: Implications for Training Researchers, Developers, Evaluators and Others" will be discussed by William J. Gephart, Phi Delta Kappa International. Based on the well accepted principle in architecture that "form follows function," the program for training the design methodologist cannot be the same as the program for preparing the research methodologist. This symposium asserts and reasons that research and design serve different functions, therefore they are of different form.

To develop the educational program for the design specialist curriculum planners are advised to employ the proposed design methodology with consideration of the following two imperatives: (1) the adequate program for design methodology cannot be expected to be a collection of courses from different specialties (2) any program being implemented ought to be considered as the best plan to date *with* the specification of procedures for evaluating its process and product and for making changes to improve its product.

These papers will be discussed by James Pophum, University of California, Los Angeles; Robert L. Baker, Southwest Regional Laboratory for Educational Research and Development; Richart Otte, U.S. Office of Education; and Roy Forbes, U.S. Office of Education.

DIAGNOSIS AND PLANNED CHANGE OF REASONING LEVELS AND SKILL ACQUISITION THROUGH THE USE OF A CRITERION-REFERENCED, THEORY-BASED INSTRUMENT

DAVID H. FELDMAN, Yale University; WILLIAM M. BART, University of Minnesota, ORGANIZERS

In recent years there has been increasing demand for measurement techniques that do not depend on the normative assumptions of current achievement and ability measures. Rohwer (1971), for example, in his recent review of the relationship between cognitive development and education, gave considerable emphasis to the need for assessment devices which are based on the theoretical contributions of Bruner and Piaget. Rohwer also emphasized the need for instruments based on criterion-referenced testing and task analysis conceptions, such as those of Gagné and his colleagues. The proposed set of papers reports progress made on the development of an assessment technique which is derived from cognitive development theory, primarily Piaget's, and is also influenced by the task analytic work of Gagné. The instrument is intended to permit diagnosis of both general reasoning level development, in Piaget's terms, and the specification of skill attainment in relation to a valued criterion.

"Map Understanding in Cross-Cultural Perspective: Malawi, Africa" will be presented by T. A. Mast, University of Minnesota, S. R. Lawless, Soche Hill College and D. H. Feldman, Yale University. This paper is a report of a cross-cultural study comparing 160 Malawi, Africa children with previously reported data for Chinese, Black and White children in San Francisco, California and St. Paul, Minnesota. A number of opportunities were exploited in the study. *First*, it provided an opportunity to test the applicability or validity of the map understanding test in a different culture. *Second*, the study allowed us to gather data bearing on Piaget's assertion that cognitive development takes place in an invariant sequence of stages, regardless of the cultural setting in which cognitive development takes place. *Third*, we were able to compare the effects of years of schooling versus years of age in cognitive development; that is, the East African children often started school later and were thus several years older than their American counterparts (e.g., a child who was in the sixth grade might be 13 or 14 years old in Malawi, while virtually all children in this country are in the sixth grade at 10 or 11 years). The results of the study suggested that there are limits to the usefulness of the map understanding test in another culture. They also support Piaget's invariant stages assumption, but limitations of the instrument prevent a definitive statement on this matter. The most significant finding was that years of schooling and years of age interact in producing reasoning levels among children. Our instrument predicted, in many cases, that African children would be responding for the most part at a concrete level, while in fact a majority of the African children were responding formally. This finding suggests that the children had, through their experience outside of school, the ability to develop structures for formal reasoning about maps. Or, alternatively, they were better able to utilize school instruction in the formation of such concepts than younger, same-grade peers in America. Finally, the study provided little support for the belief that individuals in primitive cultures develop through the same set of stages in cognitive development but do not reach as high a level as in more industrialized cultures. If anything, the results suggest that the African children were able to achieve formal reasoning of a more complete sort with respect to map understanding than their American counterparts with the same number of years of schooling. As indicated above, however, this result may be due to the increased age of the Malawan subjects.

"A Multilinear Ordering of Map Understanding Tasks" will be presented by K. Lele and W. M. Bart, University of Minnesota. This paper reports a reanalysis of the original San Francisco data (N = 270, 90 each of White, Chinese, and Black children) using a new technique for determining multilinear sequences. For this project the map understanding test data collected by Feldman and his associates and reported by Feldman (1971) and Feldman and Markwalder (1971) was analyzed using ordering theory procedures (Airasian and Bart, 1971; Bart & Kruse, in press). Ordering theory has, as a primary intent, the generation of hierarchies (or multilinear orderings) for sets of tests items or tasks that can be dichotomously scored. With the use of an ordering theory computer program developed by W. Bart and K. Lele at the University of Minnesota, the multilinear orderings for the twenty-five map understanding tasks for three ethnic groups (Chinese, Negro, White) were analyzed to determine cognitive patterns that are (1) common across ethnic groups and (2) unique to each of the ethnic groups. Comparison was made between the multi-linear orderings which account for between 95 to 100 percent of the map understanding test response patterns and Guttman's Scale results for the same data. A discussion is included indicating other possible applications of ordering theory techniques for cognitive development research.

The third presentation, by V. K. Gray, University of Minnesota and D. H. Feldman, Yale University, is titled "Group versus Individual Analysis of Spatial Reasoning in Three Ethnic Groups." In this paper some questions pertaining to the validity of the Map Understanding Instrument were asked. These questions pertain to the applicability of previously reported *group* findings to the *individual* children within these groups. The argument underlying the paper is that the educational usefulness of diagnostic information must be applicable to individuals; the study was inspired by reanalysis of other group data which had the same concern (Feldman & Johnson, 1971). There were two parts to the reanalysis. *First*, the protocols of individual subjects who made up the various group results reported in previous studies were compared with their group pattern. The results of this reanalysis indicated that individuals, for the most part, had similar patterns of responses to their groups, in contrast to the Feldman and Johnson (1971) reanalysis of Lesser's patterns of mental abilities. As in the Lesser reanalysis, however, there was some variability in results depending on the particular technique used to match individuals to their group pattern. The second phase of the reanalysis utilized a hierarchical clustering computer routine presented by Feldman (1967) and adapted for present study by V. K. Gray of the University of Minnesota. The purpose of this cluster analysis was to determine if natural clusterings of individuals would occur, given the validity of the individual distributions of reasoning level responses. The results of the clustering analysis indicated that there were four groups into which the subjects tended to divide themselves with a small number of subjects falling into a fifth, undetermined, group. These groupings are compared with the results using ethnicity, grade and sex categorical variables of previous studies.

The final paper is "Diagnosis of Susceptibility to Reasoning Level Change" by W. E. Markwalder, Southern Mississippi University and D. H. Feldman, Yale University. The purpose of this experimental intervention study was to determine if the map understanding instrument could be used to diagnose readiness for reasoning level change. A pilot study using the Feldman-Salomon ranked distractor technique indicated that Variation Score (a weighted index of variability of response across reasoning level stages) was positively correlated with degree of reasoning level change among fourth, fifth, and sixth grade subjects over a 12-week period. In the present study, the instrument was administered to three fourth-grade and three sixth-grade classes on a pre/post basis with a 12-week interval between administrations. Subjects were categorized as transitional or stable on the basis of their pretest Variation Scores and assigned to one of three groups: a control group receiving a placebo; a treatment group receiving an intensive cognitive training session; and a second treatment group receiving artificial time pressure during the post-test administration. The treatments were applied one week prior to post-testing. It was hypothesized that subjects with high Variation Scores show greater change from pre to post-test than stable or low VS subjects. It was further predicted that the modal response level of high VS subjects receiving a treatment would be plus or minus one stage from their pretest modal response level, depending on whether the treatment was the cognitive enhancement or time pressure treatment. Results are discussed in terms of the utility of the instrument for diagnosing readiness for reasoning level change within the context of attainment of school tasks.

David R. Olson of the Ontario Institute for Studies in Education will serve as discussant.

DIFFERENTIAL OPTION WEIGHTING

GERRY F. HENDRICKSON, Johns Hopkins University, ORGANIZER

Differential weighting of items or options has long been studied by researchers and employed by practitioners. Recently differential weighting of item options using a technique described by Guttman has received much attention. It is the purpose of this symposium to explore this technique in detail. The first paper presents the mathematical foundations of Guttman's scheme and discusses a computational technique. The next paper presents an empirical study showing the effect of this type of option weighting on test reliability and validity. The following two papers discuss the effect of Guttman weighting on the correlation of weighted and unweighted test scores and on the factor structure of the test, respectively. The final paper describes a use of this type of differential weighting.

"The Relation of the Method of Reciprocal Averages to Guttman's Internal-Consistency Scaling Model" will be presented by Frank B.

Baker, University of Wisconsin and Cyril J. Hoyt, University of Minnesota. A scaling technique known as the Method of Reciprocal Averages has been in use since the early 1930's. This technique yields a set of item response weights for a psychological inventory which maximizes the internal consistency of the inventory for a group of subjects. Although the technique has been used for many years, its mathematical foundations have not been made explicit. In the present paper it is shown that the informal data processing procedures of this technique actually solve the set of linear equations yielded by Guttman's Least Squares Model for internal-consistency scaling. The constraint imposed by Guttman to insure that the solution yields a nonextraneous set of weights is also met. From a computational point of view the Method of Reciprocal Averages has an advantage over the principal components approach employed by Guttman's solution as it does not require the calculation of an item response category co-occurrence matrix. In addition, the Method of Reciprocal Averages can be implemented as a simple extension to existing item analysis computer programs.

"Effects of Item Option Weighting on Validity and Reliability of Shortened Forms of the GRE Aptitude Tests" will be discussed by Richard R. Reilly and Rex Jackson, Educational Testing Service. Item options of shortened forms of the GRE Verbal and Quantitative Aptitude Tests were keyed using the Guttman scaling procedure. A double cross-validation design was employed with samples A and B each consisting of 2,500 sets of item responses from the December, 1970 GRE administration. The samples were divided by randomized-blocking on total GRE score. For each test form two separate keying procedures were used. The first, designed to maximize coefficient alpha, keyed each item using as a criterion the scores on the m-1 remaining items, while the second maximized parallel forms reliability. Cross-validated reliabilities and intercorrelations were examined and compared with results obtained using formula scores. The factor structures of each test before and after option weighting were also compared.

In a second phase of the study the validities of weighted versions of the tests were compared with formula score validities. Overall grade-point average in college served as the criterion in the following sample. Because grades were collected from a number of institutions varying considerably in quality, data were pooled using a "central prediction" method due to Tucker (1963). Within school correlations were also computed.

"The Sensitivity of Guttman Weights" will be presented by Bert F. Green, Jr., Johns Hopkins University. Test scores that are weighted sums of dichotomously scored items correlate very highly with conventional test scores (unweighted sums of dichotomously scored items). Weighting item options differentially provides a different test score, which will probably correlate less highly with the conventional test score, but the correlation may still be too high to make weights profitable. Limits on this correlation will be presented, and some examples will be presented. The implications for the sensitivity of the individual weights will also be examined. The sensitivity of Guttman weights will be characterized by comparing variants of the weighting scheme with respect to the criterion used in deriving the Guttman weights (the maximum between-item variance).

"Comparison of the Factor Structure of a Guttman-scored vs. a Rights-only-scored Test" will then be discussed by Gerry F. Hendrickson and Bert F. Green, Jr., Johns Hopkins University. It has been shown that Guttman weighting of test options results in marked increases in test reliability. However, the effect of this type of weighting on the structure of the test is not known. Hence, the purpose of this study is to compare the factor structure of Guttman-weighted and rights-only-weighted tests and to relate, if possible, the change in structure to the change in reliability. The tests used were all four subtests of the Scholastic Aptitude Test. Items of each subtest were intercorrelated and the resultant matrices factor analyzed, first weighting with Guttman then with conventional weights.

More variance was accounted for by the first several factors of Guttman-weighted tests than by these same factors in conventionally-weighted tests. Also, the tests for which there was most increase in variance were the ones for which there was greatest increase in internal-consistency reliability. Finally, the factor structure of Guttman and conventionally weighted tests was quite different; that is, items loaded on different factors in the two cases.

Finally, Fred Pyrczak, Jr., of California State College, Los Angeles will present the paper, "Objective Evaluation of the Quality of Multiple-Choice Test Items by Means of Differential Choice Weighting." In the past, attempts to measure item quality have made use of subjective judgments, indices of item difficulty, and indices of item-choice correlation with a criterion variable.

Davis (1950) originally proposed the use of information provided by item-choice weights to evaluate item quality. Following his proposal two new indices have been developed to assess item quality. The first index was designed to indicate the extent to which a given item differentiates between those who know the answer and those who do not. The second index was designed to indicate the extent to which the distracters differentiate among those who are either misinformed or partially informed.

The validity of the new indices was determined using judges' ratings of the quality of multiple-choice items as the criterion. A special set of items was written illustrating three levels of each of nine important characteristics of multiple-choice items, and a guide list of critical points to be considered in evaluating the quality of multiple-choice items was prepared for use by the judges. The validity of the new indices for measuring item quality is compared with that of conventional item-analysis data.

It is hoped that this thorough, integrated presentation (examining mathematical foundations, an empirical study, some effects and a use of differential option weighting) will provide a framework for further research. This framework will be especially valuable to those interested in actually implementing this weighting scheme.

Fredrick B. Davis, Test Research Service, will serve as discussant.

DO WE PRACTICE WHAT WE PREACH? ARE SYSTEMATIC RESEARCH, DEVELOPMENT, DIFFUSION AND EVALUATION STRATEGIES BEING USED IN ESTABLISHING RDD&E TRAINING PROGRAMS?

SUSAN S. KLEIN, U.S. Office of Education, ORGANIZER

This symposium is designed to help RDD&E program planners, trainers, students and employers identify if and how RDD&E strategies or tools can be used in the design and implementation of RDD&E training programs. The specific objectives are: 1) to review the implications of recent OE funded research for the training of RDD&E personnel; 2) to identify additional research needed on the training of RDD&E personnel; 3) to describe how development strategies have been used in selected R&D training programs; and 4) to present some strategies which may be used to diffuse successful RDD&E training materials and programs.

Susan S. Klein, U.S. Office of Education will present "Overview: Use of RDD&E Strategies by the Research Training Branch of NCERD,OE." The Research Training Branch is attempting to use and encourage the use of RDD&E strategies to develop, strengthen and implement educational R&D training programs. Research activities have included reviews of literature on RDD&E, the identification of skills used by R&D personnel, descriptions of educational training programs and a design study to determine employer needs for RDD&E personnel.

Various types of development strategies are being used in the materials development, consortia, and new model programs. Some of these strategies are more systematic than others. All of the OE funded Research Training programs are required to have internal or formative evaluation components. Systematic summative evaluation plans are in early stages of development. A RDD&E communications center has been conceptualized to help with the dissemination of educational

RDD&E information and training materials, but the operational mechanism still needs to be established.

Henry L. Ammerman, Teaching Research, will discuss "Research Implications from the Oregon Project; The Generation of Information to Support Long-term Manpower Studies of Planning for Training Programs in Educational RDD&E." The data from this study, collected from 20 case studies of exemplary RDD&E projects, provides an initial mapping of the domain of educational RDD&E. Implications for educational R&D personnel training can be derived from examining the empirically based framework incorporating the following conceptual sets: Definitions, Interactions, Mechanisms, Outputs, Operations, Inputs and Organization.

"Research Implications from the AERA Task Force Project: A Study of Research and Research-Related Personnel in Education and Procedures for Facilitating and Improving the Training of Such Personnel" will be presented by Blaine R. Worthen, University of Colorado. Major objectives of this study include: 1) determination of the functions, tasks, skills and knowledge required of educational R&D personnel; 2) the development of instruments to assess R&D competencies; 3) an inventory and description of current educational R&D training programs; 4) an updating of the Clark-Hopkins personnel projections based on funding levels; 5) a synthesis of existing personnel studies based on non-financial projections; and 6) a synthesis of existing studies of RDD&E personnel.

"Future Research Strategies to Improve Educational RDD&E Training Programs" will be discussed by Paul D. Hood, Far West Laboratory for Educational Research and Development. Various types of research efforts are needed to improve educational RDD&E training programs. Some research needs arise from logical questions about employment needs and functions of RDD&E personnel, instructional methodology, or operational program strategies. Others arise from political demands often related to society in general. Most research efforts have focused on non-political substantive issues. However, it is possible that empirical research on political issues would benefit the RDD&E program decisions as well.

Then, Joseph Ward, Far West Laboratory for Educational Research and Development, will present his paper, "Development Strategies Used by the Far West Consortium for DD&E Training". The Far West Consortium has been developing planning and design course modules and assessment instruments on "Listening and Speaking," "Information/Data Collection," "The Consideration of Alternatives," and "Statistics." Development strategies are also being used in the overall Consortium Management, Engineered Internship, Personnel Systems, etc.

Finally, John E. Hopkins, Indiana University, will discuss "Evaluation of Educational RDD&E Training Programs". Procedures used to determine how the RDD&E training programs are meeting the desired objectives will be examined. Specific attention will be given to the evaluation of the three R&D training consortia.

The use of the research, development, diffusion and evaluation tools should not be unique to the establishment of educational RDD&E training programs. In fact, people involved in RDD&E training programs should have greater command of RDD&E skills and thus establish exemplary programs using the RDD&E processes.

John C. Egermeier and Cora P. Beebe of the U.S. Office of Education and Arliss Roaden of Ohio State University will discuss the presentations.

EVALUATION OF PERFORMANCE CONTRACTING: EMPIRICAL FINDINGS AND OBSERVATIONS

MILTON D. JACOBSON, University of Virginia, ORGANIZER

Accountability and its handmaiden, performance contracting, are very much on the contemporary academic scene with pro's and con's about it emanating from all quarters—lay, professional and union.

The objective of this symposium is to present empirical findings by those who were in 1970-1971 responsible for performance contracting experiments and projects, including the O.E.O. study and the Virginia project, two of the largest experiments in performance contracting to date; by those who have developed performance contracting programs; by those who evaluated pupil, teacher and project performance, and by those who assisted school systems in the management of performance contracting.

Differing and sometimes conflicting points of view based on empirical data are presented with evaluative perspective by the participants who represent the spectrum of "involved" agencies: state departments of education, local school districts, instructional contractors, evaluation and management specialists.

Dr. Milton D. Jacobson, Director of the Bureau of Educational Research at the University of Virginia chairs the symposium, presenting an overview of performance contracting, summarizing the presentations by those who evaluated pupil, teacher and project performance; and by public education.

Dr. Horace W. Ray, Fellow at Battelle Memorial Institute presents the results of Battelle's analysis of the impact of performance contracting on student achievement in the OEO Performance Incentive Remedial Education Experiment. Both first- and second-year achievement test results are presented. In addition the design, objectives and the scope of the OEO experimental study are described. His paper is titled, "Impact of Performance Contracting on Student Achievement in the OEO Performance Remedial Education Experiment."

Dr. Robert V. Turner, Special Assistant to the Superintendent of Public Instruction in the Virginia State Department of Education discusses the Virginia Performance Contract in Reading, presenting the history, procedures and outcomes of this the first state-wide effort in performance contracting. Hard and soft data findings are summarized across grade levels, and the program is conceived as a model that provides for total involvement of all staff, for individualization of instruction and program, and for accountability. His paper is titled, "The Virginia Performance Contract in Reading."

Dr. Paul Bell, Director of Instruction for Dade County, Florida relates how the Dade County public schools, with representatives from local professional organizations, the Dade County Administrators Association, and representatives from the Title I (Elementary and Secondary Education Act) parent and student advisory council, have been planning since March, 1971 for the implementation of a performance contracting project. These plans for performance contracting are based largely on pursuing three major areas of concern: (1) increasing the curricular and instructional change potential; (2) increasing the potential for participatory management of teachers; and (3) maximize cost-effectiveness in improving students' basic skills.

Dr. Bell explains that these concerns are being explored through the application of a portion of Title I funds to performance contracting in *internal* (teacher) and *external* (private sector contracts). The school system's approach to performance contracting is based upon a unique definition of "accountability": a management concept based on the principle of management by exception, whereby goals are defined into specific objectives and criteria for measuring success are determined through a participatory management process involving students, teachers, parents, and administrators under the proposed program. Decisions regarding programmatic areas such as curriculum and methodology are reflected to a great extent by the recommendations of the lowest operations unit, the individual school faculty or the classroom "contractor." Financial resources and logistical support are provided to those operating units which accept responsibility for accomplishing a greater number of objectives or a given number of objectives at a higher level of student proficiency.

He reports that the program has as its long range objective: (1) to significantly increase the achievement of Title I eligible students, grades 3-6 in math and reading; (2) to significantly increase the attendance behavior patterns related to students' academic success in the classroom, including increased attendance rates and improved student attitudes toward professional staff, to peers, and to the school community in general; and (3) to demonstrate the feasability of utilizing the new concept of risk capital and incentive bonuses and incentive contracting for increasing the achievement of Title I eligible students, grades 3-6.

By providing opportunities to contract with both interested faculty groups and with external private sector groups, the school system hopes to identify a cost effectiveness, instructional program which can be installed in schools serving similar target populations which will result in improved student performance.

The Dade County School Board is initiating this project as part of its overall objective to introduce accountability into instructional programs. His paper is titled "Performance Contracting—A Systems Approach".

Dr. Brian Frieder, President of Alpha Learning Systems presents a review of the problem of evaluation of performance contracts, discusses the particular unknowns that are crucial to performance contracts as a sound business venture, and then suggests some solutions for the future of performance contracting from the instructional contractor's point of view. His paper is titled, "Evaluation of Performance Contracts from a Business Perspective."

Dr. Charles A. Woodbury, Jr., Associate Professor in Education at the University of Virginia cites recommendations for evaluation in performance contracting, from an *a posteriori* viewpoint based on assessment of pupil achievement and effective outcomes in 24 experimental and control schools. Observations and findings are cited regarding involvement of the evaluator, test selection, administration and security, achievement standards, effective measurement, and programmatic design. His paper is titled "Evaluation in Performance Contracting: an *a posteriori* View".

Mr. Charles L. Blaschke, President of Education Turnkey Systems, Inc., discusses the program planning, development, implementation, monitoring and economic analysis techniques which have been used in projects such as the OEO and the Virginia experiments. Considerable emphasis is placed on the COST-ED Model as a tool for budgetary planning, program design, simulation, and collective bargaining. His paper is titled, "Program Planning Development, Implementation, Monitoring and Economic Analysis Techniques in Performance Contracting."

Because performance contracting is a pioneering effort, experiences by those who have participated in this educational innovation should be shared with others as guidelines to the introduction, execution and adjudication of this instructional approach and effort.

EVALUATION PROSPECTIVES: A FOCUS ON CURRENT GAPS

LEON JONES, Governors State University, ORGANIZER

The objectives of this symposium are to present an evaluation perspective on: 1) theoretical gaps, 2) methodological gaps, 3) practical gaps.

Jimmie C. Fortune of the University of Massachusetts will present the paper "Problems Facing the Evaluator of Social Action Programs". For the most part, program administrators operate all programs in a similar manner irrespective of the nature or purpose of the program. With few notable exceptions, social action programs are operated in a traditional way without much thought being given to their aims and objectives. In fact, administrators go on from year to year sometimes changing somewhat the work they do but without clearly formulating a basis for their program of delivery. This being a necessity has a profound influence on the quality of service they render.

This condition may explain why it is entirely possible for public schools' evaluations to be meaningless. There may be a relationship among the degree of strength of social action programs, evaluation methodology, and the training provided in institutions for both administrators and evaluators.

Suffice it to say that problems facing the evaluator of social action programs are not unique. In fact, the problems facing the evaluator of social action programs fit within the operational framework of those problems encountered in the evaluation of ongoing programs. Evaluation, like other scientific disciplines, should operate via logical deductive principles.

Thomas E. Hutchinson, also of the University of Massachusetts, will discuss "Some Overlooked Implications of the Purpose: to Provide Data for Decision-making." Some evaluation methodology has been developed for the purpose of providing data for decision-making. Unfortunately not all of this methodology has attended to some important implications of this purpose. The purpose is fulfilled if, and only if, the data provided is actually used in the decision making process. To the extent that (a) the evaluation produces data that is not used, that evaluation is wasteful; and (b) the evaluation produces no data for some decisions that need to be made, it is incomplete.

More importantly, however, it is necessary to take account of the fact that decision-makers are real people. If the person or persons for whom the data is collected do not believe in the utility of the data provided they will ignore that data, the evaluation resources used to generate that data will have been wasted, and the purpose for the evaluation will have failed. An evaluation methodology that does not assure that the data will be used does not accomplish the purpose: to provide data for decision-making.

Some specific implications of the above for evaluation methodology are as follows: the goals evaluated should be the decision maker's goals for the enterprise, the variables measured should be those of concern to the decision maker, the observational techniques that are used should possess decision-maker validity, and so on.

Leon Jones, of Governors State University, will then present "A Methodological Gap Regarding the Completeness Aspect of a Goal Intent." The area of methodological research and the investigations of methods of data collection and analysis have striven for many years. It appears, however, that even if all evaluators and prospective evaluators were ready to adopt the most efficient evaluation procedures, there would be no adequate combination of existing methodology for them to use.

By methodological gaps, the writer means the absence of a set of procedures or methodology that enhances the understanding and/or mastery of an evaluation problem or issue. It is noteworthy that, to a great extent; methodological gaps have not yet been articulated and/or publicized on any wide scale. The gaps considered in this paper do not span the entire evaluation area, however.

Two important methodological concepts from a theoretical point of view are *consistency* and *completeness*. In practical respects, the consistency aspect can be established without much difficulty. The attainment of completeness implies the attainment of consistency.

Robert E. Stake, University of Illinois will discuss "An Approach to Problems Facing the Evaluator of Instructional Programs." The problems that the evaluator of instructional programs faces includes levels of evaluation. Essentially, there are two levels of evaluation—high and low. In the case of high level evaluation, it makes sense to expect results that are generalizable. A low level of evaluation would be more conclusion-oriented. These levels fit comfortably within the framework of the traditional notions of summative and formative evaluation. Formative evaluation approximates the low level as used here.

There are more ways than one to evaluate instructional programs. Formative evaluation offers no panacea to the problem facing the evaluator of instructional programs. In fact, formative evaluation emphasized variation in the characteristics of the outcome. Such variation adds to the complexity of the problems. The evaluation of instructional programs has to be a complex process, however. In the field, in the classroom, even using the best of the anthropologist's skills, we cannot detect the ingredient that is present in optimum proportion; we cannot tell what is active and what is inert and what is catalytic; we cannot tell what is causing what. The natural variation and covariation is too infrequent and capricious to be a dependable basis for generalization.

Finally, Blaine R. Worthen, of the University of Colorado, will discuss "Decision-making in the Absence of Information." If a fundamental purpose of evaluation is to assist decision-makers in making logical decisions, then decision-making in the absence of information can be considered by looking at changes that take place without evaluation.

It is unfortunate that more often than not the only correct method of prediction is "hindsight" prediction. "Hindsight" prediction can best be described as reliability indicators based on the nature of what has occurred. Usually, decisions made in the absence of information possess some of the ills of "hindsight" prediction. They lack the outcome that the application of a system of appropriate strategies could offer.

If education is to move forward, then it must move away from the most popular and most successful of all prediction techniques—hindsight prediction. The thirst for education to move forward suggests new changes. Evaluation provides an alternative way for decision-makers to meet the challenge of change in the absence of information. This can be accomplished by (a) determining the existence of discrepancies and (b) using discrepancy information to identify weaknesses.

This symposium is scientifically important to the field of education to have an operational concept of evaluation presented as a form of decision-maker oriented research. It is educationally important to have a series of current evaluation gaps identified and articulated by professional educators. This importance will be amplified somewhat by the presentation of a viable evaluation perspective relative to some of the gaps. It is educationally important in its own right to have a symposium made up with participants, whose evaluation discipline and orientation differ markedly, treat a common topic.

David C. Berliner of the Far West Laboratory for Educational Research and Development, Leonard Cahen of Educational Testing Service, and Bruce W. Tuckerman of Rutgers State University will act as discussants for these papers.

IN DEFENSE OF TYPE III ERRORS: FORTHRIGHTLY FRIVOLOUS, FREQUENTLY FARCICAL FANTASIES IN EDUCATIONAL RESEARCH, DEVELOPMENT AND EVALUATION

W. JAMES POPHAM, University of California, Los Angeles, ORGANIZER

Members of any research and development community should take their mission seriously, but they should not take *themselves* too seriously. There are therapeutic dividends to be gained from chuckling at our own shortcomings. This symposium is designed to present such a humility-inducing experience for both the participants and the audience. It is, in essence, a reprise of the highly successful symposium (employing mirth-production as the criterion) staged two years ago at the annual AERA meeting in Los Angeles. On that occasion, in a symposium entitled "Empirical Sediment in Educational Research," a group of seasoned researchers shared with the audience a series of methodological and conceptual errors they had committed during their careers. The symposium had been sporadically formulated for almost two years under a less pretentious title of the *Blooper* symposium. The session was, by consensus reports, a riot. As a change of pace from the typical heady fare of an annual meeting, a session designed chiefly for fun provides welcome relief.

Nonetheless, one cannot overdo a good thing. An annual comedy blast might prove tiresome. After a year's layoff, however, it is time for the latent satirists to emerge. A new effort has been planned to entertain both audience and participants while examining some frailties in the conduct of educational research.

An eminent collection of AERA members has been assembled for the proposed symposium, representing specialties of educational research, evaluation, and development. While there will clearly be variance in both the comedy and the candor of the participant's confessions, the general theme around which the symposium is organized deals with the identification of methodological deficiencies in the conduct of educational evaluation, research, and development. An examination of the particular presentations will reveal more clearly the nature of the symposium's substance.

Robert E. Stake of the University of Illinois will speak on the topic of "The Seven Principal Cardinals of Educational Evaluation." His presentation consists of a review of the principal principles to guide evaluation efforts, in cardinal order, as ordered by the CIRCE flock (the Center for Instructional Research and Curriculum Evaluation). These principles lead to an honoring of personal judgment, the protection of diversity in gathering and reporting perceptions, a moratorium on claims that the Red Sea was not held back, and other demands that persons be rational, plus an honoring of the belief that education is a part of the Good Life and needs no Life-Thereafter Payoff Justification. These principles are derived from the works of Yin and Yang.

Addressing a major research dilemma faced within the nation, Lee S. Shulman of Michigan State University will make the following presentation: "Strategies for the Decentralization of Research Expertise in the United States." Professor Shulman, based as he is in a moderately sized middle western culture center, has through the years been faced with the near perfect isolation associated with a Big Ten University town. He will analyze the causative factors contributing to the current inequitable conditions, for it is his contention that clusters of educational research competence are not proportionately arranged within the U.S. Dr. Shulman will offer potential solutions to this crisis-laden problem arena, the solutions ranging in sophistication from almost to possibly.

Richard E. Schutz of the Southwest Regional Laboratory for Educational Research and Development will offer the following presentation: "A Modest Proposal to Solve the Outstanding Problems of DOD and NASA with Educational Research Techniques." The proposal is directed to a problem solution. The severe problems of the United States in providing adequate defense of our nation and aggressive exploration of our universe are well known. Educational research has much to offer these endeavors. The most promising techniques of time-worn value in educational research will be extended to indicate the anticipated consequences were they to be adopted generally by the military and space complex. The mind-boggling simplicity of the extrapolation will be embellished at length and supported by rigorous rhetoric. Vivid verbiage will preclude any requirement for audio-visual support of the presentation.

Calling upon his years of professional experience in the Bell Laboratories as an experimental psychologist and telephone repairman, Ernst Z. Rothkopf will speak on the multipurpose topic: "On the Epidemiology of Ignorance in Research Populations." Dr. Rothkopf has employed this title successfully with a wide variety of disparate topics and promises to extend that range in the present symposium. Should time permit, Dr. Rothkopf will lead the audience in audio-lingual pronunciation drills of the term "Mathemagenics."

Focusing on the methodological problems associated with trial-revision educational development, W. James Popham of UCLA will offer the following presentation: "The Seamy Side of Educational Development, Wherein the Author Reveals Unexpurgated and Previously Secret Episodes in the Lives of Stellar Developers." True life anecdotes in the instructional product development enterprise will be candidly recounted. Professor Popham may, or may not, formulatively evaluate audience reaction to his presentation by employing, with randomly selected attendees, Galvanic Skin Response devices and sponge-based perspiration indicators.

Michael Scriven of the University of California, Berkeley will come to grips with a fundamental issue, "The Pornographic Content of Evaluation Literature," and will incisively excise the latent eroticism thinly disguised in the writings of our foremost evaluation theorists. By describing potential perversities on the part of certain evaluation writers, Professor Scriven's remarks will aid and abet those morally oriented decision makers who are wont to taxonomically classify literature along a chastity continuum.

While the symposium will not call upon a formal discussant, participants have agreed to interact energetically with each other, e.g. through grimace and feigned approval, during presentations other than their own.

MEASURING WITH THE SEMANTIC DIFFERENTIAL IN EDUCATIONAL RESEARCH: SOME METHODOLOGICAL PROBLEMS

MERVIN D. LYNCH, Northeastern University, ORGANIZER

To date work with the semantic differential has been devoted mainly to the isolation of factors of connotative meaning and in these connections, the semantic differential has been extensively applied without sufficient knowledge of the methodological guidelines for its research use. The major objective of this symposium is to bring together research which has as its focus the study of methodological problems in the use of the semantic differential. From this research it should be possible to get a more specific idea of the range of application and availability of research strategies which will maximize information gain with the use of the semantic differential.

E. Vaughn Gulo, College of Education, Northeastern University, reports on results of four studies whose major focus was to isolate and identify consistencies in student perceptions of teaching effectiveness of college professors. His paper is entitled "Measuring Dimensions of Teaching Effectiveness with the Semantic Differential." In these studies ratings were obtained from subject samples at two universities on semantic differential scales over an eight year period of time. These ratings were subjected to correlation and factor analysis. Results were threefold: Factors such as teaching dynamism, acceptance-change and action-freedom appear over time and with different student populations; the proportion of variance for each of these factors varied between populations studied and from one factor analysis to another; the semantic differential seems to be an especially useful technique for quantifying emergent variables associated with students perceptions of teaching effectiveness and effective professors.

Roger Brightbill, Department of Psychology, Northeastern University, evaluates two experimental studies of group differences made with the semantic differential. His paper is entitled "Indexing Differences Between Groups with the Semantic Differential." Such factors as the selection of concepts, the selection of scales and the selection of subjects are analyzed. Two studies including susceptible and non-susceptible hypnotic subjects are utilized as an example of this type of research. In the studies reported, concepts related to hypnosis, such as sleep, trance, science and magic were utilized along with scales felt to be appropriate to judging the concepts and representing three major factors identified by Osgood and his colleagues. No significant differences were found, leading to the conclusion that the semantic differential is not a good instrument for evaluating group differences.

Richard Scotti and Mervin Lynch, College of Education, Northeastern University, report on the development and cross-validation of a set of semantic differential scales for measuring at elementary grade levels. This paper is entitled "Semantic Differential Scales for Indexing at Elementary Grade Levels." Ratings were obtained on 55 semantic differential scales on the concept myself from 216 elementary grade children distributed equally on 2nd, 4th, and 6th grade levels, males and females. Correlation and factor analyses were made on the responses for the 55 scales for each grade level and each sex. A least squares transform was computed between factor matrices, pairwise, for sex and grade levels. Semantic differential scales were selected which represented commonalities among intersections of the least squares transform, and these are presented in this paper.

Irene Nichols, College of Education, Northeastern University, reports on the effects of ratings of concepts on scales with structural as opposed to common and familiar opposites. Her paper is entitled "Effects of type of Bi-polar Opposite Scales used on the Ratings of Concepts." Two groups of subjects, 18 in each group, rated twenty concepts on 16 semantic differential scales. The scales represented evaluative, potency, oriented activity and stability factors and were selected from scales reported by Osgood. Scales which were structural opposites such as kind-unkind and familiar or common opposites such as kind-cruel were alternated between the two groups and ratings obtained. The findings showed that no systematic overall effect in the ratings of concepts results from using structural as opposed to familiar and common opposites but limited scale specific effects did occur.

In their haste to analyze semantic differential data, researchers more often than not have ignored the multidimensional nature of their measurement technique. They have obtained ratings on semantic differential scales representing various dimensions of meaning and have compared ratings on two or more concepts on individual scale or dimensional scores, but not on a single index of meaning. Mervin Lynch, College of Education, Northeastern University, evaluates the D statistic as a method of analysis of semantic differential data. His paper is entitled "Multidimensional Measurement with the D Statistic and the Semantic Differential." The D statistic (generalized distance function), such as used in studies by Tannenbaum and Lynch provides an index of the similarity between two profiles of judgment (such as ratings on a person and ratings on a standard) according to the following formula:

$$D = \sqrt{\sum_{i=1}^{n} (X_{ij} - X_{ik})^2}$$

where (i) is a scale, (j) is a concept, (k) is a concept and (n) is the number of scales. This paper presents the D statistic, compares it to other avenues of analysis of semantic differential data, reports on prior applications and considers the distributional nature and interpretation of D in terms of direction and degree.

The semantic differential has often been abused as a measurement technique, in that some researchers have utilized it to gather large arrays of data without prior planning on mode of analysis, selection of scales or applicability. Hopefully the presentations in this symposium will stimulate prior methodological evaluation in planning and use of the semantic differential and provide some useful guidelines to its research applicability.

Tom Edwards of Boston University will discuss these papers.

THEORIES OF CRITERION-REFERENCED TESTING

SAMUEL A. LIVINGSTON, The Johns Hopkins University

The purpose of the symposium will be to provide educators and educational researchers with techniques for assessing the statistical properties of criterion-referenced tests. Each of the three participants will propose a different set of techniques, each one based on a consistent theory of criterion-referenced testing. The three theories represent three fundamentally different approaches to criterion-referenced testing; they are based on classical test theory, on item-sampling theory, and on the use of repeated measures. Each of the three participants will answer some or all of the following six questions: 1) what is a criterion-referenced (CR) test? 2) what assumptions form the basis for a theory of CR tests? 3) how can we determine the reliability of CR tests? 4) how can we validate CR tests? 5) how should we select items for CR tests? and 6) how can these procedures be justified intuitively?

Samuel A. Livingston of Johns Hopkins University will present "A Classical Test-Theory Approach to Criterion-Referenced Tests." The basis for this approach is the classical test-theory model: observed score equals true score plus error of measurement. The assumptions are those of classical test theory. Livingston defines a CR test as any test for which a criterion score has been specified as the score with which each student's test score is to be compared. The theory which he presents closely parallels classical test theory for norm-referenced measures, except that the variance, covariance, and correlation of both true scores and observed scores are replaced by similar concepts based on deviations from the criterion score.

One consequence of these definitions is that the CR reliability of a group of test scores increases as the mean score moves away from the criterion score. Livingston claims that this property of CR reliability reflects the greater confidence a test user can place in the group of decisions he must make about the individual students' true scores in relation to the criterion score. When the mean score is equal to the criterion score the CR reliability equals the norm-referenced (NR) reliability of the scores.

Livingston recommends that CR tests be validated by the Campbell-Fiske multitrait-multimethod matrix technique, using CR correlations in the matrix instead of conventional NR correlations. This distinction is important, because the CR correlation of two sets of scores may differ greatly from their NR correlation; one may even be positive when the other is negative, because a score below the group mean may nevertheless be above a specified criterion score.

Thomas E. Kriewall, of the Institute for Educational Research, will present "Aspects and Applications of Criterion-Referenced Tests." Since CR tests are designed to measure achievement of individual students relative to delimited instructional objectives, Kriewall suggests that CR tests be constructed by random sampling from an item pool which is structurally defined by item-generation rules. The class of items appearing on a particular CR test is characterized by the width of the parameter values used to control the item-sampling process. The measureable component of an instructional objective is implicitly defined by the vector of parameter values. A student's percentage score on such a CR test is an estimate of his skill proficiency, defined as the probability that he can satisfactorily answer any item sampled from the pool.

Kriewall recommends the use of Neyman-Pearson theory as a guide for the selection of a quality-control sampling plan, a sample size (i.e., test length), and a criterion value as functions of risk of occurrence of mastery-group classification errors. Since efficient instruction implies both high proficiency and low variability in performance, CR test scores ideally have a unimodal, negatively skewed, leptokurtic distribution with near-zero variance. The quality of a CR test is therefore not measureable with NR reliability or validity indices, but is determined by the adequacy of the item-sampling process used to generate the test.

Stephen H. Ivens, of the College Entrance Examination Board, will present "A Pragmatic Approach to Criterion-Referenced Measures." Ivens defines a CR test as one which consists of items constructed from behavioral objectives and which includes a performance criterion, which may be a relative standard of performance. Ivens' approach to reliability, validity, and item selection is based on an analysis of item difficulty values. Among students who have not been instructed in the behavior that an item measures (and who therefore presumably have not mastered it), item difficulty should be near the chance level. Among students who have been effectively instructed, the value should approach 1.00. The difference between these two difficulty values may be used as an index for item selection. Item difficulty values may also be used to assess homogeneity; the difficulty values should be approximately the same for all items designed to measure the same objective, both before and after instruction.

Ivens advocates the use of test-retest or parallel-forms procedures for determining the reliability of a CR test. The index of reliability for each item is the proportion of students whose score (pass or fail) on an item is the same for both forms of the test. The mean item reliability can be used as a measure of reliability of the entire test. A second measure of reliability is the proportion of examinees whose scores on the second form do not differ by more than some specified amount from their scores on the first form. Ivens also suggests a measure which provides an indication of reliability and validity together. It can be computed from responses by the same students to the same items at three different times: once before instruction and twice after instruction.

Michael M. Ravitch, Stanford University, Richard Schutz, Southwest Regional Laboratory for Educational Research and Development, and William E. Coffman, University of Iowa, will discuss these papers.

DIVISION E: COUNSELING AND HUMAN DEVELOPMENT

Paper Sessions

ATTITUDES OF BLACK STUDENTS TOWARD HIGH SCHOOL COUNSELING AND SELECTED COLLEGE STIMULI

Delivery Systems: "Saber Tooth" Effect in Counseling

ELWOOD B. TRAYLOR, Wichita State University

This study reported the role of counselors as perceived by black students in a secondary school. Observational and interview methods were employed to obtain data from 24 black students selected at random from the junior and senior classes of a large metropolitan secondary school. Findings include: counselors were essentially concerned with administrative tasks (scheduling); contacts with counselors were related to academic problems; frequency of contacts were minimal (annual); students with personal problems would look outside the school for help. The need for organizational patterns which would make counseling services more accessible was suggested.

Attitudes Toward Selected Stimuli: Commonality and Differences Within and Between Two Dissimilar High Risk Black College Groups

DAVID E. KAPEL, Temple University

An exploratory study was conducted to determine attitudes toward college related (Professors, Name of Institution, Afro-American courses) and personal (Black Students, White Students, Me-Myself) stimuli within and between two dissimilar high risk Afro-American College groups at two institutions using Osgood's Semantic Differential technique. Findings suggest that there was a great deal of commonality between the two groups in their attitudes towards the stimuli. There were no significant Institutional or Dimensional main effects, but the Stimuli main effect reached significance. Post hoc tests were used to examine differences. Black pride and identification were the strongest stimuli.

CAREER DEVELOPMENT RESEARCH

A Longitudinal Study of the Career Development of Health Professionals

ANNE E. CROWLEY, Association of American Medical Colleges; JOSEPH K. WITTEMAN and FRANK T. SCHIMPFHAUSER, Ohio State University

This study investigates the characteristics of persons seeking medical, dental, and pharmaceutical careers in order to throw light on the process by which young people are attracted to these fields and decide to dedicate themselves to them. Multivariate analysis of Project Talent data was carried out to evolve hypotheses for the construction of a tentative model describing the career development of health professionals that will be available to the respective professions for application and validation.

An Objective, Multidimensional, Measure of Vocational Maturity: Development and Validation

DAVID J. FORREST, RICHARD H. LINDEMAN, JEAN-PIERRE JORDAAN and DONALD E. SUPER, Teachers College, Columbia University

Vocational maturity is a major construct in vocational psychology and criterion for evaluating guidance procedures. This project sought an easily used, reliable, multidimensional, valid measure of career development. Subjects were samples of 8th, 10th, and 12th grade students in and near Flint. The *Career Development Inventory,* scored for three factor scales of affective and cognitive development, has reliabilities of .71 to .87. Scales correlate with criterion variables of age and performance, and with vocational maturity measures developed by others, and should be useful in evaluating readiness for vocational counseling in secondary schools and for evaluating procedures and programs.

CAREER GUIDANCE SYSTEMS

Measuring the Outcomes of an Individualized Career Guidance System

JACK A. HAMILTON and STEVEN M. JUNG, American Institutes for Research

The general goal of the guidance research program described is to enable each participant to better plan and carry out a process of personal and occupational development most suited to his own needs. Specific goals are stated in terms of the behaviors an individual must exhibit while engaging in the planning process and working to accomplish the objectives he sets as part of this process. As a result, criterion-referenced measurement procedures have been deemed particularly appropriate. Data generated by these procedures are presented with indications of their usefulness in providing feedback both to participating individuals and to developers of the program.

The Educational and Career Exploration System: First Year Report of a County Wide Field Trial and Evaluation

RICHARD H. LINDEMAN, DAVID J. FORREST, ROGER A. MYERS and MARTIN J. BOHN, JR., Teachers College, Columbia University

The major research objectives were to determine effects of a computer-assisted counseling system, the Educational and Career Exploration System (ECES), on student vocational behavior and the quality of counselor-student contacts, and, further, to determine student, counselor, and parent attitudes toward the system. The sample consisted of 4600 experimental and control tenth-grade students in 25 public high schools. Analyses consisted of experimental-control comparisons with sex, school, and counselor training controlled. Preliminary results indicate highly favorable reactions from students, parents, and counselors.

CLASSROOM PUNISHMENT AND EARLY SCHOOL FAILURE: REVIEWS OF THE RESEARCH LITERATURE

Effects of Early School Failure on Self-Image Development and Implications for School Counselors

DON E. HAMACHEK, Michigan State University

The primary objective of this paper is to order and synthesize major research efforts of the past thirty-five years which have a direct bearing on what is likely to happen to children who experience more or less consistent early school failure, particularly as far as subsequent school adjustment and self-image development is concerned.

From intensive library research supplemented by the author's previous investigations and clinical experience, it tentatively concluded that consistent early school experiences with failure have disastrous long-range effects. Simply, children who fail are likely candidates to end up as adults who fail.

Classroom Punishment: A New Look

HARVEY F. CLARIZIO, Michigan State University

Punishment is widely used by teachers in their attempts to modify behavior. Traditionally, however, certain specific objections have been leveled against the use of this technique on the grounds that its use produces a variety of undesirable side effects. The basic premise of this presentation is that the unwanted side effects are not inherent in the technique per se but rather in its misuse and that punishment can have a beneficial effect when properly applied. Five undesirable side effects and limitations will be discussed as well as ways to prevent or minimize each of these.

COUNSELING AND BEHAVIOR MODIFICATION IN ELEMENTARY SCHOOLS

Group Desensitization of Test Anxiety in Elementary School

ARREED F. BARABASZ, State University College, Buffalo

On the basis of Wolpe's theory of reciprocal inhibition it was hypothesized that test anxious 5th and 6th grade *S*s exposed to a systematic desensitization program would exhibit lower autonomic indices of test anxiety and show a significant improvement of scores on the criterion measure. Randomized homeroom groups of students participated in a 5 day desensitization program. Confirming the hypothesis, analysis of variance showed a significant ($p<.05$) reduction in test anxiety as determined by GSR and a significant ($p<.05$) improvement in criterion test scores.

Counselor Verbal Interaction with Elementary School Children

JON CARLSON, Governors State University

The counseling interaction of self-referred (S-R) and other referred (O-R) elementary school clients was observed during the first, third, and fifth interviews. Audio tape-recordings were then analyzed and categorized via the Amidon Interaction Analysis Scale and statistically treated by a multifactor analysis of variance design involving repeated measures on fixed elements. Counselors were found to use more leads of O-R clients; initiated more indirect than direct statements; used similar verbal behavior regardless of referral status; and tended to talk more than their clients. Overall, counselor-client verbal interaction patterns remained similar throughout the five interviews.

The Effect of Realistic versus Imaginary Aggressive Models on Children's Interpersonal Play

ROBERT D. STONE and WALTER G. HAPKIEWICZ, Michigan State University

One hundred eighty lower elementary school children were randomly assigned to same sex pairs and each pair was randomly assigned to one of three treatment groups: real-life aggressive film, aggressive cartoon, or nonaggressive film. Results revealed a treatment by sex interaction effect indicating that boys who viewed the realistic aggressive film were significantly more aggressive in play than boys who viewed the other films ($p<.05$). There were no significant differences between the aggressive cartoon and nonaggressive film group. Boys were generally more aggressive than girls while girls exhibited significantly more prosocial (sharing) behavior than boys ($p<.01$).

THE DEVELOPMENT OF INTELLIGENCE AND CREATIVITY

A Longitudinal Study of Creative Abilities in Adolescents

CHARLES E. SKIPPER, Miami University

A three year study found that adolescents who participated in a program of creative writing, dance, drama, music, and visual arts were significantly different in certain creative abilities than a matched non-attending control group. Male and female participants were more verbally creative in terms of fluency, flexibility, and originality than the non-participants. No differences were found for figural creativity. Males in the program perceived and reported themselves as being more aesthetically sensitive, curious and mentally active than non-participants. Male and female participants were involved in a greater number of cultural activities than non-participants.

The Relationship of Parent-Child Interaction and Intelligence Among Children from Large Families

DONALD L. THOMPSON, University of Connecticut

The purpose of this investigation was to explore the relationship between the intelligence of children from large families and parent-child interaction patterns. The sample for this study consisted of 56 children from families with five or more children. All families were residents of Appalachia living in poverty. Children in Group B (IQ 95 and above) perceived parental interaction with children to be greater in quantity and of a higher quality than children from Group A (IQ 90 and below). These findings suggest that traditional educational models should include more parent education components to help parents help their children.

The Relationship of Early Verbal Ability to Later Measures of General Intelligence: A Longitudinal Study

RALPH A. HANSON, Southwest Regional Laboratory for Educational Research and Development

This study considers the source of differences observed in verbal ability between males and females. Longitudinal data on verbal ability, including measures made from 6 months through 13 years of age, were obtained on a sample of male and female subjects. Also, home environmental factors relevant to verbal behavior were assessed between 0-3 years. The relationships between verbal ability and the environment for both sex groups are presented and discussed. The results indicate that sex differences do appear to be related to differences in the home environment for the two groups.

FACTORS RELATING TO ACADEMIC PERFORMANCE IN COLLEGE

The Relationship of Student Grade Expectations, Selected Characteristics, and Academic Performance for Education, Engineering, and Business Majors

MICHAEL E. ROHR and JERRY B. AYERS, Tennessee Technological University

Students ($N=415$) in three academic areas estimated their final grade in a course at the beginning, middle and end of a term and completed the 16PF Test. Results indicated that the *S*s initial grade estimate was most accurate. No differences were found between high (A,B) and low (C,D,F) achieving *Ss*. *S*s with high academic averages underestimated and *S*s with low averages overestimated grades. Overestimating Education *S*s were less intelligent than underestimators and less assertive and mature than accurate and underestimating *S*s. Underestimating Business

*S*s were less mature than overestimators and possessed lower self-sentiment than accurate estimators.

Intellectual Commitment in University Students

BARBARA HUMMEL-ROSSI, New York University

This investigation focused on understanding the development of intellectual commitment in university students. Intellectual commitment is defined as an intense and persevering involvement with intellectualism that is manifested by actively pursuing intellectual activities. An input-output model with two sources of input and the one output, intellectual commitment, was proposed. The first input source, Pre-university Input, includes the individual's past intellectual behavior, and certain personality characteristics. The second input source, University Input, represents the influence of the university environment, specifically, the influence of the individual's university associates. Multivariate stepwise regression analysis indicated that the proposed intellectual commitment model is viable.

An Index and Procedure for Readmitting the Academically Dismissed Student

GRETCHEN A. BIERBAUM and R. J. PLANISEK, Kent State University

An index and procedure were sought which enabled university officials to establish the probable academic success of each student seeking readmission after academic dismissal. A critical index and procedure for readmitting students was suggested by the performance of 1460 students. The technique was found to be a valuable research procedure which could be used to reflect past policy and guide present decisions. The procedure works with quarter hours or semester hours and can be used by personnel with limited knowledge of mathematics. In addition, it can aid the development of hypotheses when used in conjunction with other variables.

Personality and Behavioral Correlates of High and Low Student Participation and Growth in an Experimental College

DR. ROBERT D. BROWN, University of Nebraska

This investigation examined personality and behavioral correlates of high participation, satisfaction, and faculty growth ratings for students in an experimental residential college at the University of Nebraska. Knowing more about faculty and student behaviors should make it possible to increase the impact of such ventures. Freshmen completed several standardized questionnaires, a behavioral check list and some were interviewed. The results revealed a number of significant correlates of high participation and satisfaction which included high degree of contact with faculty. Students rated as high growers were unique, being brighter, autonomous, and bookish. These findings have implications for faculty behavior.

OCCUPATIONAL ASPIRATIONS OF BLACK STUDENTS AND PARENTS

The Inner-City Black Male High School Student: His Self Concept, Academic Achievement, and Occupational Aspirations

DOROTHY WOHRNA MARTIN, Baltimore City Public Schools

The purpose of this study was to compare the self concept, academic achievement, and occupational aspirations of two samples of inner-city, black male students in racially different schools. Objectively scored measures included the Waetjen *Self Concept as a Learner*, the *Crary American History Test*, and the Haller-Miller *Occupational Aspiration Scale*. Covarying age and IQ, analysis of data indicated self concept was significantly higher in the segregated school, raw score of the achievement test was higher in interracial schools, but percentage correct and standard scores on achievement test and aspiration scores were not significantly different. The .05 level was used.

Occupational Aspirations of Black and White Parents for Their Recently Graduated Children

ARTHUR A. DOLE, University of Pennsylvania

This study was concerned with the extent to which the occupational aspirations of 143 black and white parents were related to the primary educational-vocational activity of their children six months after graduation from secondary school. With the exception of the parents of black females, parent aspirations were strongly associated with type of post high school activity. It was concluded that parent aspiration is a potent force in the entry stage of career development. Implcations for theory and practice were discussed in terms of the generation gap, social change, economic crises, and community-school action.

SELECTED PAPERS

Prediction of Youth Contacts with Law Enforcement Agencies Over an Eight Year Period

JOHN F. FELDHUSEN, Purdue University; JOHN R. THURSTON and JAMES J. BENNING, Wisconsin State University, Eau Claire

The purposes of this research were to determine the reliability with which youngsters' contacts with law enforcement agencies could be predicted over an eight year period and to determine the significant predictors. The prediction battery included the KD Proneness Scale, the Glueck Delinquency Scales, a behavior problems checklist, scores from two semi-projective tests, reading and arithmetic achievement, and an interview with the child's mother. Discriminant function analyses of the data yielded an accuracy ratio of 79% for the validation sample and 73% for the cross-validation. The checklist, IQ, sex, and mother's approval of the child were significant predictors.

Peer Counseling: Selection, Training and Implementation

THOMAS W. MILLER, Rosary Hill College

The effects of communication training on improved interpersonal functioning was assessed by means of a pre-test post-test design on subjects selected as peer counselor trainees at a four-year liberal arts college. The data confirmed a significant difference between the empathy, genuineness and positive regard of the subjects before and after training sessions. Correlation coefficients were positive, substantial and in the predicted direction. The results suggest that the selection and training procedures utilized seem effective in facilitating improved interpersonal verbal functioning of peer counselor trainees. Discussion focused on application, implementation and import for future research.

The Use of Telephone Therapy as a Short Term Crisis Intervention Counseling Technique in a Community Mental Health Center

BEN PERRI, Ingham County Community Mental Health Center

Subjects receiving telephone therapy or face-to-face therapy were more improved on their personal problems, than the delayed therapy control group as measured by the Personal Problem Improvement Scale. No difference was found between the three experimental groups of telephone, face-to-face, or delayed therapy as measured by the KMP adjustment scale. No counselor treatment differences were found. The mortality rate difference between face-to-face and telephone therapy was not significant. Counselors saw clients as most adjusted, while subjects saw themselves as least adjusted. Subjects were the most satisfied with therapy, while counselors were the least satisfied.

STUDIES IN DRUG ABUSE PREVENTION

A Study of Four Approaches to Drug Abuse Prevention

JOHN D. SWISHER and RICHARD W. WARNER, JR., Pennsylvania State University

The purpose of this study was to compare the relative effectiveness of four approaches to drug abuse prevention among secondary school youth: a health unit, relationship group counseling, reinforcement group counseling with drug experienced models and reinforcement group counseling with non-drug experienced models. None of the approaches had any impact on the attitudes of the students toward drug use or their actual use of drugs. Analyses of the counselors' behavior indicated that they were not functioning consistently in terms of the theoretical models. Involvement of student role models (drug or non-drug experienced) had no impact on the student participants.

Effecting Drug Attitude Change in College Students via Induced Cognitive Dissonance

JOHN D. SWISHER and JOHN J. HORAN, Pennsylvania State University

The presence of a significant interaction ($p < .03$) indicated that the cognitive dissonance treatment applied to a sample of 34 freshmen orientation students was differentially effective: students who preferred direct experiences and who were made to feel dissonant about holding liberal drug views, showed considerably more conservatism in their attitudes toward drugs than similar students who had not yet been exposed to the experimental treatment. Students who preferred mediated experiences and who were thus not made to feel dissonant during the experimental treatment, presented essentially the same attitudinal posture as similar students in the control group.

STUDIES OF CHOICE OF COLLEGE AND COLLEGIATE MAJOR

Major Field Transfer: The Self-Matching of University Undergraduates to Student Characteristics

LAWRENCE K. KOJAKU, University of California, Los Angeles

This study demonstrates that when undergraduates in universities change from one major field to another, they attempt to better match themselves to the characteristics of students in those fields. The study's instrument and its sample of over 1,700 upperclassmen attending 17 universities in 1969 are taken from a larger UCLA Higher Education Project survey. The subjects' freshman and upperclassman major field choices are matched against ten measures of activities, attitudes, family background, aptitude, and personality traits reflecting intellectuality. Increased F ratios indicate that after curricular transfer there is greater homogeneity within and greater heterogeneity between fields than before transfer.

A Comparison of Factors Underlying College Choice by Students and Parents

THOMAS A. BOWERS, University of North Carolina, Chapel Hill; RICHARD C. PUGH, Indiana University

By means of questionnaire responses received from 90 percent (4,215) of the 1970-71 freshman class and from 50 percent (2,941) of freshman parents, this study sought to compare reasons given for choosing a major state university. A principal component factor analysis indicated the same factors entered the decision for both groups, although parents and students differed in the relative importance attached to each factor. Financial considerations, geographical location, and academic concern were "parent" factors; social and cultural opportunities and informal sources of advice were "student" factors. This implies a complex interaction in the college choice decision.

Institutional Images: Importance to Student Choice of College

A. I. MOREY, University of Southern California

The purpose of this study was to examine the conceptualization and function of college images as a factor in college choice. Data were obtained from entering freshmen and sophomore students at three university campuses. The images held of the campuses differed markedly. Moreover, the images held by entering freshmen were often incongruent with those held by sophomores. The reasons reported for selecting each campus differed from one another in a direction congruent with the different images held of the campuses by freshmen. It was concluded that institutional image is apparently one critical thread in understanding the complexities of student self-selection.

Goal-Orientation versus Self-Orientation: Two Perspectives Effecting Indecision about Collegiate Major and Career Choice

VICTOR H. APPEL and DONALD B. WITZKE, University of Texas, Austin

A second order factoring of the responses of 400 selected college freshmen to the *Career Decision Readiness Inventory* identified two "source" factors: Goal-Orientation and Self-Orientation. These orientations seem useful in accounting for indecision and decision about collegiate major and career choice among college students. Goal-oriented type students are more likely to have a single vocational objective in mind. Their collegiate efforts are instrumentally related to successful attainment of that goal. Self-oriented type students seem surprisingly unconcerned with vocational preparation. They are much more interested in using their collegiate experience as a basis for personal growth.

VERBAL AND NONVERBAL VARIABLES IN THE COUNSELING INTERVIEW

The Effect of Interpersonal Interaction Distance on the Conditionability of Positive Self-Reference Statements in a Quasi-Counseling Interview

RICHARD F. HAASE, University of Massachusetts; DOMINIC J. DiMATTIA, University of Bridgeport

The effect of personal space on the conditionability of positive self-reference statements was studied in a 4 (distance) x 2 (conditioning periods) verbal operant conditioning paradigm. Thirty-two subjects were randomly assigned to one of four distances from the interviewer (36, 48, 60 or 72 inches). Each subject participated in an 18-minute interview consisting of baseline, conditioning and extinction periods. Results showed a significant conditioning effect. Conditioning was not differentially affected by the distance factor. The distance by periods interaction was nonsignificant. Results were discussed with respect to previous literature dealing with proxemic variables in counseling.

The Relationship of Personality Characteristics to Paralinguistic Behavior in the Interview

RICHARD F. HAASE, University of Massachusetts

Thirty-six subjects were administered the 16PF and participated in a brief, unstructured interview. Paralinguistic behavior (fluency, duration and speech rate) were scored from tapes of the interviews and correlated to personality characteristics. Four significant relationships emerged revealing that fluency is related to adventurousness; duration is related to maturity and super ego strength; and speech rate is related to surgency. The relationship between personality and nonverbal behaviors is discussed with reference to diagnosis and communication in counseling-like interviews.

Verbal Characteristics and Visual Interaction in an Interview Setting as a Function of Interpersonal Distance and Room Size

FLORENT R. DUMONT, University of Moncton

Within an analog interview setting, the influence of room size, interpersonal distance and interviewer upon the following criterion variables was investigated: duration of utterance, verbal quantity, verbal velocity and eye contact. Using a mixed factorial analysis of variance design each of 36 students was interviewed across every level of three room sizes and three interpersonal distances. Close distance (30") depressed the duration and quantity of utterance as well as eye contact. Eye contact was significantly increased in smaller rooms, decreased in larger. Study concludes that interviewee speech and visual behavior is significantly affected by the variables investigated.

Nonverbal Communication in the Counseling and Psychotherapeutic Interaction: An Investigation of the Differential Effect of Selected Therapist Proxemic Variables on Client Attitude

FRANCIS D. KELLY, University of Massachusetts

The study was primarily concerned with assessing the communicational significant of five nonverbal therapist behaviors. Sixty male subjects, between the ages of 18 and 25, representing six diverse client subgroups were individually shown 72 pictures of a therapist seated and talking with a client. Subjects were asked to rate for each picture on a five-point scale how they thought the therapist felt about them based on how he was seated. Responses were analyzed by a 3x2x2x3x2x6 factorial analysis of variance. It was concluded that different nonverbal therapist proxemic cues are instrumental to the conveyance of positive or negative affect.

VOCATIONAL GUIDANCE: EVALUATION OF HOLLAND'S SELF-DIRECTED SEARCH

A Comparison of Satisfied and Dissatisfied Users of Holland's Self-Directed Search (SDS)

ANNE M. COLLINS and WILLIAM E. SEDLACEK, University of Maryland

Preliminary use of the SDS led to the speculation that some people were very dissatisfied with their results and others were quite pleased. Subjects extremely satisfied (N=485) and extremely dissatisfied (N=343) with their SDS results were compared using chi-square and *t*. Results indicated that a greater percent of those dissatisfied did not obtain codes associated with an occupation listed in the SDS booklet. Also the satisfied group received more Artistic and Investigative codes, while the dissatisfied group received more Conventional codes. The possibility that the SDS favors people from upper socioeconomic levels and implications of the results were discussed.

An Evaluation of Holland's Self-Directed Search

THELMA ZENER BALDWIN, U.S. Office of Child Development

Students from four high schools were randomly assigned to one of three conditions in an evaluation study: (1) Holland's Self-Directed Search (SDS), (2) a modified version of the SDS which was not self-administered and (3) a control group which received no treatment. Questionnaires were given immediately after the treatment, the next day and three weeks later. Using MANOVA techniques, significant effects were observed in measures of students' thoughts and understanding of the process of vocational choice and in their acquisition of information about occupations. Students' evaluations of both versions of the SDS were moderately positive.

VOCATIONAL GUIDANCE RESEARCH

The Relationship Between Selected Characteristics of Ninth Grade Boys and Curriculum Selection and Success in Tenth Grade

JEROME T. KAPES, Pennsylvania State University

The purpose of this study was to investigate the vocational development process as it pertains to curriculum selection and success in tenth grade. The sample consisted of 458 male students from a large Pennsylvania school system. Predictor data consisted of 16 variables and included eight GATB aptitudes, four occupational values, Vocational Development Inventory, father's educational and occupational level, and level of occupational aspiration. Criterion data consisted of enrollment in a vocational vs. academic curriculum and GPA in each curriculum. The data were subjected to both multiple regression analysis and multiple discriminant function analysis. Many significant and useful relationships were uncovered.

Differential Validities for Shop Courses

JANICE J. LOKAN and GERALD HALPERN, Ottawa Board of Education

The study aimed to establish a validated test battery to assist non-academic students in identifying occupations most likely to offer them rewarding careers. Subjects were 600 vocational school students, whose low reading level necessitated the construction of several special tests. Criteria were success and satisfaction in academic and shop training programmes. Validation and cross-validation of the selected predictor battery are completed; on-the-job follow-up of the validation sample is planned. Both absolute and differential validity coefficients were computed. Generally, girls were more predictable than boys, and differences between academic performance and performance in shop areas were moderately predictable for both sexes.

SYMPOSIA

THE BARCLAY CLASSROOM CLIMATE INVENTORY: A DIAGNOSTIC-PRESCRIPTIVE INSTRUMENTATION FOR IMPLEMENTING LEARNING STRATEGIES IN THE ELEMENTARY SCHOOL

JAMES R. BARCLAY, University of Kentucky, ORGANIZER

This symposium will report research completed on the validation and use of the BCCI in the elementary classroom. Both research and utilization studies will be reported.

In the first presentation, "A Multivariate Analysis of the BCCI Scales in Relationship to Temperament Categories and Actual Behavioral Observations," James R. Barclay and William E. Stilwell of the University of Kentucky and David A. Santoro of Cleveland State University report a multivariate analysis of the BCCI Scales both with and without behavioral correlates. The analyses were completed on approximately 700 children and include 15 behavioral categories obtained on these children over a period of ten days.

James R. Barclay, University of Kentucky, will then present a paper "A Multivariate Analysis of 1600 Elementary Children's BCCI Scores

Categorized by the Occupational Code of Their Father." Twenty-one occupational categories were identified utilizing Holland's classification scheme. The BCCI scores of each occupational group were analyzed via a multivariate procedure. Fourteen of the classifications for males, and thirteen for females showed significant multivariate F ratios suggesting that social interaction patterns in the elementary school are related to paternal occupations.

In the paper "A Multi-Method, Multi-Trait Analysis of Elementary and Junior High School BCCI Scores," Charles F. Elton and James R. Barclay of the University of Kentucky report that using a multi-method, multi-trait analysis of both elementary and junior-high samples of self-report, group sociometric choices, teacher ratings, vocational interests and behavioral interest reinforcers analyses were completed showing the consistency of certain scale loadings on the factor analysis results.

June Church and William Stilwell of the University of Kentucky will present a paper titled "Evaluating the Consequences of Reporting BCCI Scores to Elementary School Children by Individual and Group Methods." This study will report a doctoral dissertation in which elementary children were pre and post-tested on the BCCI and both individual reporting and group counseling sessions were used as experimental treatments.

George Trapp of Morehead State University will present "The Relationship of Self-Reported Problems to Psychometric Scores in the BCCI." This study reports both cross-validation findings between the BCCI utilizing other self-reporting and psychological inventories, and the Kuder. Relationships between BCCI scores, categories and location dimensions are reported in terms of expected problem behaviors.

Lisa K. Barclay, University of Kentucky, will present "A Pre-School Version of the BCCI." This study will report preliminary efforts at extending the self, group and interest dimensions of the BCCI to pre-school children with particular reference to culturally disadvantaged groups.

David A. Santoro of Cleveland State University and William E. Stilwell and James R. Barclay of the University of Kentucky will report "Case Studies." This will summarize efforts at implementing the BCCI system with learning teams in both the Cleveland and Lousiville Public Schools.

THE INTENSIVE APPROACH IN COUNSELING RESEARCH

CARL E. THORENSEN, Stanford University, ORGANIZER

The objectives of this symposium are: 1) to present the theoretical rationale of intensive study of individual cases, 2) to provide examples of empirical studies of individual cases, 3) to compare the intensive approach with the prevailing extensive group design strategies in counseling research, and 4) to present some data analysis techniques for intensive designs.

The first presentation entitled "The Empirical Case: An Intensive Research Strategy for Counseling" will be given by Carl E. Thorensen, Stanford University. The value of conducting intensive empirical studies of the individual case will be presented and contrasted with the prevailing extensive group design procedures. The relationship between an intensive research design and the concerns of humanistic scholars and psychologists will be discussed especially as to internal or covert phenomena. Examples of empirical case studies with clients involving internal and external responses will be provided along with a brief discussion of data analysis techniques.

"The Conditional-Genetic View of Causality: Some Implications and Uses" will be presented by Stanley R. Strong of the University of Minnesota. Three perspectives of causality—historical, teleological, and conditional or contemporaneous will be presented. The view will be offered that in order to understand the actions of the individual a conditional view of causality is essential, due to marked limitations in causal inferences about individual performance that characterize historical and teleological perspectives. The implications of a conditional-genetic view will be discussed relative to the type of research needed in counseling if the actions of individuals are to be accurately described, predicted and controlled.

Owen White of the University of Oregon in "Methods of Data Analysis in Intensive Designs" will present some currently available analysis techniques for describing continuously gathered data on individual subjects over time. In addition, some newly developed procedures for predicting individual performance, given baseline data, will also be discussed. The limitations of visual inspection as the sole basis of decision-making with intensive data will be considered. The need to develop short, easy to understand and use analysis procedures for counselors, teachers, and other educational practitioners will receive attention.

The symposium is directed at stimulating counselor researchers to expand the repertoire of their inquiry skills. One of the marked limitations of current research is a limited research methodology and perspective of investigators. Developing our understanding and increasing the use of intensive designs focused on the actions of individuals is considered to be an important step theoretically and clinically.

LEARNING SPECIALIST, RESEARCH TACTICS, AND FUNCTIONAL DIRECTIONS

H. WELDON FRASE, Grand Valley State College, ORGANIZER

This symposium is the result of a Division E Task Force. A model of a professional role combining developmentalist and counselors will be discussed. Participants will present longitudinal research evaluation approaches toward the development of self-actualizing, fully functioning individuals.

SEXISM: A RESEARCH APPROACH

WALTER M. MATHEWS, University of Mississippi, ORGANIZER

The objective of this symposium is to present the results of some of the most recent research on sex differences and biases and to relate them to the American cultural and educational history of differentiation by sex. Several new studies will be presented that allow new light on the problem.

The history of discrimination on the basis of sex in American education will be traced from colonial times up to the present by Walter M. Mathews, University of Mississippi, as a background paper for the symposium. The title of his paper is "The Development of Sexism in American Education."

The study by Cheryl L. Reed, Purdue University, titled "The Relation of Sex Role Stereotypes to the Self-Concepts of Lower and Middle Class Elementary Children," was designed to investigate how boys and girls differ in self-concept and to relate these differences to stereotypic ideals set by teachers. The Piers-Harris Self-Concept Scale was administered in group sessions to students, grades two through six, from eight black inner city and five white urban elementary schools. Teachers in graduate level education courses were given the same scale and asked to mark each item as an elementary school boy (or girl) would mark it. Items which differentiated boys and girls within each sample (lower class students, middle class students, and teachers) were identified. Comparisons of differentiating items were made between grades, lower and middle classes, and stereotypic teacher ideals. Possible relationships of sex appropriate self-concept and academic achievement are hypothesized.

The fact that boys' reading achievement is below that of girls' has been well documented in American school systems. One category of explanation advanced for this discrepancy is the relatively few male teachers in the early elementary years and the "feminine" atmosphere of the typical school. Based on this hypothesis many have called for increasing effort to recruit and place male teachers in elementary education. Steven R. Asher, University of Illinois, and John M. Gottman, University of Colorado, whose presentation is titled "Sex of Teacher and Student Reading," compared reading achievement scores of students with male teachers to reading achievement scores of students with female teachers in two separate studies.

Although receiving help when it is needed should be a positive experience, there seem to be some negative consequences involved in requesting help. These center around the admission of incompetence and inadequacy which is an integral part of a help request. The specific constraints to help-seeking that Barbara Wallston will present are sex-role related—whether the task is viewed as "male" or "female" and the relation of this to the sex of the helper. This study titled "The Effect of Sex as a Variable in Help-Seeking" will be presented by Barbara Wallston of the University of Wisconsin.

Mary Ann Pate's presentation, "Self-Esteem as a Predictor of Persuasibility in Females," will be concerned with explaining why females, in persuasibility studies, have proved to be more easily influenced than males. In previous studies, self-esteem has been a predictor of persuasibility for males but not for females. It is her hypothesis that both phenomena can be explained by the traditional role to which most females are socialized. The role stresses malleability and other-directedness. Ms. Pate of the University of Wisconsin will present data collected from women who accept the traditional role and those who reject it, and will conclude which group is more persuasible and whether self-esteem is a predictor variable for "liberated" females as it is for males.

Three studies were conducted by Margaret M. Clifford, University of Iowa, and Elaine Walster, University of Wisconsin, to determine whether or not sex discrimination exists in higher education: "The Effect of Sex on College Admission, Work Evaluation, and Job Interviews." The data suggest that only when a woman has unusual ability or clearly recognized achievements can she expect equal opportunities with men. Unless a woman had an unusual academic record, she was less likely to be admitted to a college than a comparable male. Unless her work had already received professional acclaim, it was judged to be inferior to similar work by males. Unless the woman was described as a superlatively productive Ph.D., her chances of obtaining an interview were inferior to those of a male. (With identical qualifications, all but the last finding were statistically significant.)

The importance of this symposium is that it squarely faces an important area of concern for the 70's and provides a podium for discussion couched in research and reason rather than rhetoric.

SIGNIFICANT VARIABLES IN COUNSELING RESEARCH

JULES M. ZIMMER, University of California, Santa Barbara, ORGANIZER

The seminar was initiated by Dr. T. Antoinette Ryan who has our thanks for her encouragement. It is designed to ask questions rather than to secure answers. In the process of teasing out the questions, it is hoped that some relevant research strategies in counseling and human relations can be clarified. We began by breaking the task into four parts that are functionally related but can be conceptualized in a discrete manner. Dr. Edward Pepyne, University of Hartford, will explore the issues of training, Dr. Richard Haase, University of Massachusetts, will deal with interventions, Dr. Jules M. Zimmer, University of California, Santa Barbara, will deal with enabling objectives and Dr. Harold Hackney, Purdue University, will complete the presentation dealing with outcomes.

It is our purpose to look at counselor behavior as the independent variable, and counselee behavior within the session as both dependent variable and independent variable. That is, counselee behavior can serve as either the dependent variable and specified counselor behavior becomes the treatment or counselee behavior within a session is manipulated and the dependent variable becomes external outcomes.

Systematically varying the independent variable is possible if the enabling objectives are thought of as a dependent variable and stated in advance. For example, if manipulation of counselor anxiety is important, what counselor behavior has a greater probability of increasing or decreasing anxiety (enabling objectives) and finally, if counselee anxiety within a session is increased or decreased, what external outcomes are predicted.

Dr. Ray E. Hosford, University of California, Santa Barbara, will serve as discussant.

VALUES IN HUMAN GROWTH AND DEVELOPMENT

T. ANTOINETTE RYAN, University of Hawaii, ORGANIZER

The proposed symposium will address itself to the topic of values in relation to human growth and development, with implications for counseling. The symposium is designed to allow for presentation of differing viewpoints concerning the nature of values, the measurement of values, stability of values, and conflict of values in school settings. Four presentations will be followed by a discussant comment and audience participation. The symposium implements four objectives:

1. For audience participants to become aware of a number of different conceptualizations of values.
2. For audience participants to become familiar with different approaches to measurement of values, and to understand the rationale underlying each values measurement technique.
3. For audience participants to become acquainted with different ideas about educational values and impact of value conflicts in the educational setting on growth and development of the learners.
4. For audience participants to draw conclusions about relative merit of the different conceptualizations of values, the different techniques of measuring values, stability of values, and the role of educational values and the impact of value conflict in educational settings.

Fred N. Kerlinger, Professor of Educational Psychology, School of Education, New York University, will present a paper entitled "Study and Measurement of Values." This presentation will be given in light of a stated need for a theory of values and development of systematic and varied approaches to the study and measurement of educational values. Primary questions will be raised and answered during the presentation which will include the following: "What are educational values?" "How are values and attitudes related?" "How do educational values relate to general values and attitudes?" "What are the factors which precipitate value responses?" The presenter will offer suggestions for answering these questions through definition of values domain, construction and factor analysis of value items, Q-methodological studies with subjects of known value predilections, study of the referents of values and attitudes, multivariate study of correlates of values, studies of influence of values on educational policy and decisions. The point of view stressed in this presentation is that values constitute a multidimensional domain, whose first order structure is complex and varied, but whose second order structure is relatively simple. When values and attitudes are measured adequately and scientifically, the results can be used to predict a substantial proportion of the variance of educational decisions and behaviors.

David G. Ryans, Director, Education Research and Development Center, University of Hawaii, will present a paper entitled "Home and School Values: Conflict or Congruence." This presentation is given in the frame of reference which defines values as constructs with cognitive and cathectic aspects, potentially verbalizable, organizers of behavior, and equated with what is desirable. Values are seen as attachable to goals, forming criteria for selection from among available alternatives, either instrumental or terminal in nature. Values are related to, but differentiated from attitudes, opinions, and needs.

The measurement of values by use of an objective paper and pencil inventory is discussed, and the results of administering such an inventory are examined in light of differences in values across reference group, ethnic background, socioeconomic level, age, and sex. Advantages of the objective instrument will be presented. The main theme is that scientifically designed and tested objective instruments can point up dominant values of parents, school personnel, and learners, and that this information can be utilized to achieve more effective education for the nation's children and youth.

Richard L. Gorsuch, Assistant Professor of Psychology, Kennedy Center for Research on Education and Human Development, George Peabody College for Teachers, will present a paper entitled "Teacher and Pupil Values in the Elementary School." This presentation will be given in a frame of reference which conceptualizes values as being ethical or moral in nature, not related to interests or attitudes. A paper and pencil objective instrument to measure values of fourth grade children will be described, and the change in values of children over time will be examined. The central theme will be that children's values change over time, as functions of teacher-pupil relationship, pupil's own characteristics, and his peer relationships. The position is taken that there are some questions concerning the nature of mature ethical development which remain unanswered.

Joan S. Guilford, Senior Behavioral Scientist, General Behavioral Systems, Inc., will speak on the topic, "Relation of Teacher-Child Congruity of Values to Achievement." This presentation is given in light of a stated need for research on relationships between achievement and teacher-child value relationships and children's values. The presenter, speaking from a position that values and attitudes are similar, will discuss a pictorial instrument approach for measuring values of children in the primary grades, with the Values Inventory for Children, containing eight orthogonal dimensions of value. The relationships between teacher-child congruity of values and both teacher ratings and achievement scores will be elucidated, and changes in children's values over time from first to fifth grade will be examined in light of sex and ethnic differences. The central theme will be that values are multidimensional, and that the pictorial approach to measurement is preferred for children.

T. Antoinette Ryan, Researcher/Professor, Education Research and Development Center, University of Hawaii, will make concluding remarks in which the presentations will be summarized, and the conclusions drawn that the solutions of many educationally significant problems and the answers to many questions concerning ways to optimize human growth and development can be achieved through values research, including determination of optimum value climates of different school settings, identification of the stability of value orientations over time, the determination of effective techniques for inculcating, perpetuating, and modifying values. The final decisions about basic concepts and approaches for values research will be left to the audience, considering: Relationship of values to human growth and development? What are values? How can values be measured? How can value conflicts impact on guidance and learning processes in the school setting? Are values multidimensional? Are values synonymous with attitudes? What is the best way to measure: statement or pictorial, subjective or objective instruments?

Robert H. Beezer, U.S. Office of Education, will serve as discussant.

DIVISION F:
HISTORY AND HISTORIOGRAPHY

PAPER SESSIONS

EDUCATION AND PROFESSIONS IN THE NINETEENTH-CENTURY UNITED STATES

Changing Relations between Social Scientists and Educators, 1880-1920

N. RAY HINER, University of Kansas

This study takes the chronology of professions from the nineteenth into the twentieth century, attempts an intra-professional comparison which illuminates two special groups. The professions are assessed in light of urbanization and industrialization. More particularly, this version of professionalization manifests how social scientists tried to attain security, status and identity. To what extent, it is asked, did the professional associations of the social sciences free their disciplines from domination by laymen and amateurs and scholars in competing disciplines? At the same time the parallel strategy of the social scientists, their effort to establish the social sciences as a part of the basic curriculum of secondary and elementary education are explored. Among the reasons for their relative successes and failures in these efforts are found the changing ideologies of the social sciences themselves, their unique relationships with the profession of history, the threat to their professional integrity evidenced in the reformist notions of leading educators, and finally, the growing apathy among social scientists themselves toward pedagogical questions.

Education and Professional Life Styles: Law and Medicine in the Nineteenth Century

WILLIAM R. JOHNSON, University of Wisconsin

In an earlier part of the century the law was alone among the established professions in its aversion to formal professional schooling. This paper examines the practices of the legal profession, particularly on the frontier, and questions why one profession should be quicker than another to use the school as a professional agency. It is also an attempt to understand the professional law school by placing it in the context of actual careers. What services do such schools provide before and after they receive support from the majority of the profession? During this period the social implication of lawyers on circuit contrasted dramatically with the lonelier aspects of physicians treating individual patients. Such factors explain much about the different attitudes and institutions which actually educate professionals. An important thematic consideration here is the relationship between the professional school and the emerging state university. Much of the evidence for this paper emerges from a more detailed examination of the Wisconsin bar and that state's university in the nineteenth century.

The Contours of Unchosen Careers: American Schoolmen in the Nineteenth Century

PAUL H. MATTINGLY, New York University

This paper examines the professional schoolman in the middle of the nineteenth century and attempts to probe the ideological assumptions implicit in the notion of chosen career. To what extent are the choices and careers of American schoolmen affected by educational work which was politically disinterested? If politically disinterested, how could education improve one's life chances and render careers more serviceable to democratic needs? The nature of the special preparation for professional educators illuminates some of the key responses to these questions. Of particular interest are the terms and means by which one generation of schoolmen educated their successors on these points. The biographical and autobiographical literature of nineteenth-century schoolmen, especially the literature concerning Horace Mann, provides much of the evidence for this analysis of professional careers.

SYMPOSIA

ANTI-INSTITUTIONALISM VERSUS ROMANTIC REFORM: ROOTS IN THE EDUCATIONAL PAST

MAXINE GREENE, Teachers College, Columbia University, ORGANIZER

Beginning by taking note of Ivan Illich's proposals and related ones concerning "de-schooling in America," this symposium will briefly compare them with proposals being made by those concerned to reform the existing schools—George Dennison, Herbert Kohl, Paul Goodman, John Holt, and the exponents of "individualization." Making the assumption that the tension between anti-institutionalism and romantic reform has existed since the period preceding the founding of the common schools in the 1830s, the participants will examine the arguments with respect to schools offered by such men as Henry David Thoreau, Ralph Waldo Emerson, and Bronson Alcott, certain of the Utopians, and some of the early "progressives." The symposium will aim to trace the roots of current controversies and to conceive the present dialogue within a context long characterized by differences between those primarily committed to individual self-creation and those interested in building a "good society." The participants will rely heavily on personal essays and imaginative literature as sources.

THE COMMON SCHOOL IN EARLY NINETEENTH-CENTURY AMERICAN CITIES

CARL F. KAESTLE, University of Wisconsin, ORGANIZER

The period 1800-1850 witnessed the most basic transformation in the history of American schooling: the shift from an informal and unsystematic mode of schooling, depending upon parental initiative and uncoordinated schools, to a standardized, hierarchical school system amenable to public policy. Long hailed as the Common School Revival, implying both a shift from private to public schooling as well as an expansion of educational opportunity, this basic transformation is currently undergoing considerable re-examination by educational historians.

In 1968 Michael Katz, in his influential book, *The Irony of Early School Reform,* argued that the basic thrust behind the creation of public schools was social control. More recently, other historians have examined in some detail the urban origins of public school systems: demographic explosion; immigration, which greatly increased cultural diversity; increasing income stratification and residential segregation; and the physical deterioration of living conditions in cities. Crime, vagrancy, intemperence, and poverty were central in the thought of early schoolmen. Their response, the systematization of schooling, was typical of an essentially new, institutional approach to social problems in the first half of the nineteenth century.

Each participant in this symposium will briefly describe his ideas about a particular aspect of this transformation. Carl F. Kaestle of the University of Wisconsin has written a history of the systematization of New York City's schools in the period 1750 to 1850. He will discuss the relationship between the moral purpose of the schools and their bureaucratic development. Both forces tended toward conformism and homogenization; his focus is thus on the concept of depersonalization.

The tasks of cultural assimilation and building a rule-governed, coordinated system were separate but mutually reinforcing. Although the bureaucratic ethic and cultural conformism of the schools are interpenetrating, it is not sufficient, Kaestle argues, to see the bureaucratic rationale simply as a rationalization for goals of conformity, intolerance, or exclusiveness. Nevertheless, both parallel developments tended to strip the student of part of his full identity. While cultural assimilation demanded that immigrants' children lose all trace of their ethnic identity, the bureaucratic ethic called for anonymity and quantitative relationships, in order to insure both efficiency and impartiality. The two developments are therefore additive; yet, when we consider the kind of personality demanded by industrial society, they become thoroughly intertwined. To what extent do the writings of such analysts as Ellul and Goffman help illumine this historical development? To what extent is the question complicated and polemicized by our current disillusion with institutions like school systems? Professor Kaestle will explore these problems.

Stanley K. Schultz of the University of Wisconsin has examined the development of schooling in Boston during the same period. He explains that growing class alienation in the city led increasingly to reliance on institutional responses to urban problems. Similar developments occurred in the provision of urban services other than education during the antebellum period. Much of what has been presented as late nineteenth-century reform occurred in virtually identical form in early nineteenth-century cities. As the schools assumed more and more the functions previously performed by the family and the church, schoolmen sought to standardize the schools in order to strengthen their control over the educational process. The factory model inspired much of their rhetoric and their organizational ideas. Although this development seemed a logical and desirable one in the effort to impose an "urban discipline" upon the working classes, Prof. Schultz points out, bureaucratization boomeranged on the early reformers, cutting the amateurs out of control.

The ideas and systems forged in the large coastal cities like New York and Boston gradually spread to smaller cities and became part of the national educational culture. Elinor M. Gersman of Rutgers University will discuss the dissemination of urban educational thought and its implementation in Nantucket. This small city was late in establishing public schools and was in fact forced to by law in 1827. Despite the island's isolation and its unique tradition based in the whaling industry and Quakerism, Nantucket followed closely the hopes and ideals of the early school reformers elsewhere, supporting Horace Mann enthusiastically. By 1839 Nantucket was receiving wide acclaim for its extensive and orderly system of schools. Prof. Gersman will explore the reasons for this conformity with educational reforms elsewhere: for example, the decline of the whaling industry in Nantucket, the increasing heterogeneity of the population, and the islanders' driving desire to maintain both individual and community prosperity by whatever means were available. They generally believed that public education would increase community morality and order as well as help young Nantucketers to succeed financially both at home and "in America." Because there were no earlier public schools on the island, it was possible to adopt mainland reform standards quickly.

Each of the symposium participants is interested in assessing not only the intent of reformers and schoolmen, but the actual effects of schooling and is therefore interested in the use of various methodological approaches to the history of education, quantitative as well as traditional.

INNOVATIONS IN TEACHING HISTORY OF EDUCATION

ADELIA M. PETERS, University of Illinois, ORGANIZER

The major purpose of the session is to provide insights into diverse ways of teaching the history of education. Recognizing that learning takes place in a variety of ways, the participants will explore the use of some non-verbal, non-chronological methods for investigating and understanding the past. An attempt will also be made to differentiate the nature of historical inquiry from other types of inquiry.

David B. Tyack's (Stanford University) presentation will combine the use of sight and sound in the investigation of the past in his paper "Scenes and Voices From the Past."

The presentation of Adelia M. Peters, University of Illinois, Urbana-Champaign, will explore simulation theory, role-playing, and the use of various audio-visual materials in the teaching of history of education. The presentation is titled "Alternative Approaches to Teaching History of Education."

Joseph C. Bronars, Jr., of Queens College, City University of New York, will describe an approach to the teaching of historical inquiry which centers around the empirical construction of paradigms of the particular sources being analyzed. The paper, "Analysis of Methods of Historical Inquiry," grew out of the ADEM (Application and Development of Educational Models) Program at Queens College.

In the discussion session which will follow the presentations, additional contributions from those in attendance, regarding innovations, will be welcomed.

SOME STYLES OF EDUCATIONAL REFORM IN THE UNITED STATES IN THE TWENTIETH CENTURY

J. STEPHEN HAZLETT, University of Texas, Austin, ORGANIZER

This symposium will deal with selected patterns, or styles, of educational reform in the United States in the twentieth century. The federal government, a major professional association, and a municipality provide the settings for the discussion of specific reform campaigns.

The presentations will focus on the relation between reformist ideology and strategy. Underlying this focus is the assumption that exclusive attention to the ideals of reformers, on the one hand, or to the socio-political analysis of decision-making processes, on the other hand, obscures the mutually influential linkages between these two factors.

Thus, in addition to examining the value positions of particular reformers, what they sought to achieve in terms of their values, and what strategies they employed to obtain their goals, the symposium will also seek to evaluate, in an historical vein, the congruence between goals and methods. To what degree have reformist goals determined reformist strategy? And, by the same token, how have adopted strategies modified objectives? What influence have opposition and conflict had on both ends and means?

The above are some of the questions that may be treated in an analysis of educational reform from this perspective. The symposium will seek to adumbrate—at the very least—some descriptive models which may have generalizable utility in the study of current reform movements in education.

DIVISION G: SOCIAL CONTEXT OF EDUCATION

PAPER SESSIONS

BEHAVIORAL SCIENCE RESEARCH ON THE JUNIOR COLLEGE FACULTY

An Investigation of the Relationship Between Career Patterns of Pennsylvania Community College Teachers and Their Attitudes Toward Educational Issues

ROBERT A. PATTERSON, Pennsylvania State University, Delaware County

The purpose of this study was to identify the pre-organizational career patterns of all full-time faculty in the public two-year community colleges in Pennsylvania, and to investigate the relationship between the career patterns and faculty attitudes toward progressive-traditional educational issues. The major findings showed that faculties in the Graduate Study and Four-year College career pattern groups were significantly more progressive in their attitudes than faculties in the Public School and Business or Industry career pattern groups. Pre-organizational career patterns of community college faculty tend to be a significant and modest predictor of attitudes toward progressive-traditional educational issues.

The Relationship of Socialization Experience, Role Orientation, and the Acceptance of the Comprehensive Community Junior College Concept by Public Junior College Faculty

JAMES L. MORRISON, Pennsylvania State University

The relationship of the three variables of this study (see title) is explored from the conceptual framework of social action theory through the use of multiple and partial correlation analyses on the total teaching faculty of nine Florida public junior college campuses. The major hypothesis of the study that it is through socialization experiences that faculty acquire their orientations *vis-a-vis* cultural institutions and their role within these institutions was supported.

Acceptance of the Community College Philosophy Among Faculty in Two-Year Institutions

LARRY L. LESLIE, ANGELO C. GILLIE, and KAREN L. BLOOM, Pennsylvania State University

Although two-year college leaders maintain that faculty support of institutional goals are critical to institutional success, the extent of this support has not been adequately determined. This study, utilizing survey methodology, sought to measure support for the community college philosophy in Pennsylvania two-year institutions. Findings indicated modest, if not *reserved* support, for the community college mission. The greatest support was demonstrated by those under 30, by those not holding the Ph.D. and by vocational-technical faculty. The general findings of mild philosophical support has implications for faculty recruiting and training policies.

The Attitudes of Pennsylvania Community College Faculty Toward Collective Negotiations in Relation to Their Sense of Power and Sense of Mobility

JOHN W. MOORE, University of Vermont

The primary objective was to investigate the relationship between selected predictor variables (sense of power, sense of mobility, demographic) and faculty attitudes toward collective negotiations (militancy). Community college faculty (547) completed questionnaires consisting of scaled measures of the research variables. Correlation and regression procedures were used to measure the statistical and predictive relationships. Findings: (1) militant faculty have a low sense of power but a high sense of mobility, and are young, politically liberal, non-protestant, and in non-scientific fields; (2) these variables have limited predictive value; (3) prediction of militancy requires the consideration of personal and institutional variables; (4) the vast majority were favorable toward collective negotiations.

COMMITMENT TO SCHOOL CHANGE: THE LINK BETWEEN RESEARCH AND PRACTICE

The Design of Instructor-Learner Negotiation Strategies as a Means of Personalizing College Instruction

GRANT E. BARTON, Brigham Young University

The purpose of this research was to find ways of increasing personalization and relevance in college instruction. It is part of a large instructional research and development project to find instructor-teacher negotiation strategies which allow a fluidity of learning responsibility, alternative teaching sequences for students of varying aptitudes, and training programs which help instructors develop more responsive teaching styles. Standardized aptitude and personality tests were used to assess the effects of manipulating the above variables. In educational psychology classes, the results indicate that there are positive relationships between particular instructor-student personality variables and class flexibility.

Does the School Reflect the Culture: Who is Changing Whom?

JOSEPH E. GRANNIS, Columbia University

The purpose of this inquiry is to determine the relative benefits of the integrated day primary schools and traditional primary school formats. Comparison will be made of the socializing function of education in Britain and America, the authority structure of the two school systems, the role relationships between adults and children in the two cultures, and the differences in material technology of education. The meaning and appropriateness of open classroom and integrated day practices for children, teachers, parents with different conceptions of school and learning will be discussed.

How to Change School Discipline

EDWARD T. LADD, Emory University

The purpose of these investigations is to examine the following dominant ideologies of school governance: (1) the over-optimistic, essentially anarchistic ones now popular in schools of education and (2) the Puritan, totalitarian notions now practiced in most public schools that "discipline leads to self-discipline". The research includes the study of the consequences on student attitudes toward law, school, and society of the conventional school discipline and study of the litigation by parents to reverse school disciplinary procedures and to honor students' citizen-rights within the school. This research is summarized as a theory of school governance which is educationally and legally defensible.

Changing the Change Agents

ARLENE K. RICHARDS, Columbia University

This paper offers a model for the development of the tools of democratic participation: (1) grappling with policy and organizational problems; (2) proliferating alternative goals; (3) selecting and refining personal goals; (4) critically examining alternative methods of goal achievement; (5) making simulated and actual application of various methods; (6) evaluating their methods for effectiveness; and (7) evaluating and refining goals themselves on the basis of satisfaction with consequences. The original data base was the interviews of about 7,000 high school students and this was extended to include high school teachers. The research results emphasize the need for equity and reciprocity of interpersonal relations in the school.

How We Promote Change in a Junior High School Community: A Practical Approach with Theoretical Implications

FRANK FORMAN, San Francisco Unified School District

The purpose of this research is to find what changes students and teachers undergo when some of the constraints of the traditional high school are relaxed and students and teachers can jointly formulate what, when, where, and how to study. The data base is students and teachers in three alternative schools within three school systems. The research technique was a modified critical incident technique. Group and individual interviews were used with students and teachers within traditional and alternative school formats. Research conclusions pertain to such variables as basic learning assumptions, classroom decision-making, favored project content, and interpersonal styles.

CONTROL AND GOVERNANCE OF SCHOOL SYSTEMS

Local Control Over Formal Education in Two American-Indian Communities: A Preliminary Step Toward Cultural Survival

JANICE J. WEINMAN, New York City Planning Department

This paper reports on the possible causes underlying the differential response to local control over education in the two Indian communities of San Juan, which maintains an essentially theocratic government and Santa Clara which does not. Santa Clara therefore has not had to cope with the following conditions apparently impeding San Juan's potential for educational change: 1) a communication gap between San Juan's traditional governing body and the more progressive citizenry; 2) the absence of consolidated leadership among the general citizenry; 3) the subsequent allocation of final decisions to those community leaders least aware of, and/or interested in, modern demands.

The Structuring of Political Processes in Suburban School District Government

DAVID W. O'SHEA, University of California, Los Angeles

Being non-partisan, school district government lacks political parties to structure processes relating the authorities and their constituents. This leaves as problematic the ways in which political processes actually are structured in school districts. To explore this question a comparative study was undertaken of fifteen elementary districts in the Chicago suburbs. Further, the study tested the hypothesis that the structuring of political processes would vary in characteristic ways between districts in relation to their relative level of local resource utilization for elementary education. This hypothesis was confirmed by the findings, which also demonstrate the important political functions of PTA's.

Anti-Poverty Interest Group Articulation and Mobilization for Community Control in New York City

ROBERT SIMMELKJAER, Teachers College, Columbia University

Utilizing Interest Group Theory, the articulation and mobilization activities of five New York City anti-poverty agencies are examined during the school decentralization crises. Case studies of the Brownsville, East Harlem, Central Harlem, Hunts Point, and Community Development Agency, conducted via unstructured interview techniques, uncovered substantial data then subjected to descriptive and comparative analysis. The normative and empirical generalizations set forth by Moynihan in *Maximum Feasible Participation* as well as the influence of anti-poverty agencies in developing and disseminating the community control concept were additional foci. The principal findings indicate that these agencies were significant factors in changing local attitudes toward schools while promoting community control.

Community Status and Conflict in Suburban School Politics

WILLIAM L. BOYD, University of Rochester

A comparative case study conducted in the Chicago metropolitan area indicated that differences in the incidence of conflict in educational decision-making between white collar and blue collar suburban school districts were associated most fundamentally with differences in political culture. An earlier explanation, that the differential possession of conflict management resources by the two kinds of districts accounted for differences in the incidence of conflict, appeared to focus on what was primarily an important intervening variable. Data in the study, which employed the deviant case analysis method and included eight districts, were collected from school board records and by means of interviews.

FINANCING AND POLICY-MAKING IN HIGHER EDUCATION

The Efficiency/Equity Quandary and Higher Educational Finance

DOUGLAS M. WINDHAM, University of North Carolina, Greensboro

The purpose of this paper is to examine alternative means of higher educational finance in the context of how they affect the equity of opportunity for such education and the efficiency of societal investment. Higher education is shown to be inherently inequitable. The manner in which a financing program of full-cost tuition and long-term loans can minimize this inequity as well as long-term inequities while maximizing both social and private efficiency is developed. Illustrative statistics from North Carolina are utilized, but conclusions are derived in terms of any public higher educational system.

Public Policy and Public Accountability: The Politics of Private Higher Education in New York

RICHARD K. SCHER, Columbia University

This paper investigates the role played by private colleges and universities in the development of public policy for higher education in New York. Case studies of several recent state policies examine why and how these private institutions seek policy outputs from the state. The data are also used to analyze both the competition between public and private higher education for state resources, and the changing relationship between private colleges and universities and the state. Results indicate policy dominance by the governor and legislative leaders. A new institutional form, the quasi-private college or university, is seen to be emerging.

Commutation and the Demand for Local Colleges

HOWARD P. TUCKMAN, Florida State University

Does distance affect the demand for college? Part I of this paper provides a framework for computing the savings students obtain by attending local colleges. Part II applies this framework to a cohort of second-year students at the Miami-Dade junior colleges and estimates savings of $590. Part III distributes the savings by income class. Less than 7 percent of the savings go to students from low income homes. Part IV employs the savings estimates to analyze the demand inducing effects of junior colleges. It concludes that the presence of junior colleges increases the enrollments of low income students.

The G. I. Bill: Its Origins and Impact on Higher Education

MICHAEL S. GUY, University of Oregon

The paper presents a documented history of the G. I. Bill. Particular reference is given to the educational benefits and their implication and impact on higher education. An attempt is made to draw comparison and contrast with the voucher concept for financing higher education. Although the reasons for its inauguration and continuation are quite different than those that motivate the voucher system, many of the problems that developed in the implementation of the G. I. Bill may apply to the voucher. The success of the G. I. Bill as an investment in human resources demonstrates the feasibility of grants to individuals for education.

THE IMPACT OF REVENUE-SHARING ON FINANCIAL SUPPORT FOR THE PUBLIC SCHOOLS

The Impact of Revenue Sharing on Financial Support for the Public Schools

STEPHEN M. BARRO, Rand Corporation

Prediction of the impact of revenue sharing on education requires modeling of state and school district fiscal behavior. This study bases models for both levels on the economic theory of constrained maximization. A modified linear expenditure system is used to estimate parameters of the local model. The state-level model relates annual increments in state school aid to changes in federal aid and other exogenous variables. It also reflects state sensitivity to local fiscal conditions. The models are used to estimate effects of alternative federal transfer programs on school spending and state and local taxes.

INNOVATION AND CHANGE IN EDUCATIONAL SYSTEMS

Implementing Durkheimian Theory to Achieve Organizational Change

EDWARD J. NUSSEL, University of Toledo

The inability of the educational institution to engage in substantive change is premised by the position that organizational revision is imperative. The roots of such change are found in traditional sociological theory as propounded by Emile Durkheim. Support for these theories will be presented with four empirical studies dealing with teacher behavior and experimental efforts connected with the multi-unit school. The data suggest that organizational change, buttressed by Durkheimian theory, offers a hope for meaningful educational change in the future.

Team Teaching and the "Active" Classroom

ERIKA-LUEDERS SALMON, Stanford University

An original instrument was used to compare the environment of children in open-space team-teaching schools with that in self-contained classrooms. Of chief interest was the classroom giving the child choice, opportunities to work independently, and encouragement to behave actively—described as an "active" classroom. The study related several independent measures of child "activity" to type of school architecture, size of teaching team, teacher attitude, and other variables. One major finding is that open-space classrooms were more "active" than self-contained. The "activity" measures were consistent, suggesting that a "general" characteristic of the classroom environment was assessed.

Xanadu: A Study of the Structure Crisis in an Alternative School

STEVEN SINGLETON, DAVID BOYER and PAUL DORSEY, Western Michigan University

The central concern of this research is the structure-no structure dilemma as it was encountered in one alternative high school. The report is based on participant observation by the three authors and the data consists of four basic elements: field notes; indirect reports by Xanadu members of school activities previous to and during our research period; a potpourri of documents produced by Xanadu members; and written evaluations by students which pertain to the primary objective of this study. Four member beliefs are delineated in order to understand why, given the perceived need for organization, an acceptable structure was not developed.

The Study of Paraprofessionals in Urban Schools: Gaining Research Mileage Out of Educational Evaluations

JOSEPH B. GIACQUINTA, HERBERT I. LONDON and IRENE S. SHIGAKI, New York University

Six paraprofessional programs in 15 metropolitan schools were studied to test theory about factors related to successful implementation of organizational innovations. Indices of variables were built from items on two questionnaires administered to a stratified random sample of 130 paraprofessionals, teachers, and administrators. The analysis revealed minimal staff consensus about the paraprofessional's role, and showed how this along with staff willingness, ability, resources, and school compatibility may account for differences in implementation among the programs. The study demonstrates that evaluation data can answer research questions, offers a model for comparing implementation efforts, and contributes to the change literature by studying educational settings.

Application of an Anthropological Technique to Desegregated Schools

EVAN R. POWELL and VIRGINIA C. DENNIS, University of Georgia

Based on the theories and work of anthropologists Hall (1966) and Birdwhistell (1970), the DIAD system was developed to facilitate observation, classification and recording of dyadic infracommunication such as position, locomotion, interpersonal distance and angle of orientation, gaze direction, smile and audible transmissions. With the DIAD, simple observations were made of 500 dyads of B/W, M/F elementary pupils in class and out, substantiating the hypothesis that the pupils were integrated. Integration was defined as an equilibrium of dyadic infracommunication within sex and within and across race. Results could influence program planning and reinforce understandings of socio-psychological development.

INSTITUTIONAL RESPONSE TO STUDENT PRESSURES FOR CHANGE IN HIGHER EDUCATION

Differences in Perceived Institutional Functioning and Responsiveness to Change as Related to Student Types in Selected Four-Year Colleges

THOMAS J. QUATROCHE, State University College, Buffalo

The purpose of this study was to identify within the institutions of higher education investigated, the perceptions and attitudes of different types of students toward institutional functioning and institutional response to change. The study also identifies those factors that influence the kinds and degrees of student pressures for change, and the variation of institutional response to such pressures for change in three of the areas of student concern most distinguishable on campuses today—changes in curriculum, governance, and student life. Data were obtained from questionnaires returned by a sample of over 1,400 students enrolled in three undergraduate colleges in Pennsylvania.

Response of Four-Year Colleges to Student Pressures for Institutional Change

HANS FLEXNER, Pennsylvania State University; HERBERT A. AURBACH, State University College, Buffalo

The study reported here examines how different types of faculty and students in three small, 4-year colleges in Pennsylvania perceive their institution's functioning characteristics and its responsiveness to student pressure for change. The study types faculty and students according to their personal philosophies or orientations toward college; it establishes relationships between these types and their perceptions of their institutions' functioning and responsiveness to student requests for changes in the area of governance, student life and educational programs. The implications of the findings of the study for understanding organizational decision-making in smaller institutions of higher education are examined.

Differences in Perceived Institutional Functioning and Responsiveness to Change as Related to Faculty Types in Selected Four-Year Colleges

C. DONALD SEAGREN, Indiana State University of Pennsylvania

This study deals with the responses of different types of faculty at three small four-year colleges, to determine if there are relationships between *faculty types* (IV) and *institutions* (IV), and their perceptions of their *institution's functioning characteristics* (DV) and *institution's responses to student pressure for internal change* (DV). Three instruments are employed to collect the faculty responses: the Faculty Typology instrument designed by Professors Herbert Aurbach and Hans Flexner; an Institutional Functioning Inventory instrument distributed by ETS; and the Student Pressures for Institutional Response instrument. It is expected that statistical analysis of the response data will show a significant relationship between the independent and dependent variables.

Perceptions of Philosophies of Significant Others and Their Correlations With Institutional Response to Student Demand for Change

HAROLD G. RICHARD, Pennsylvania State University

Pressures for institutional change have become a major influence in American higher education. Major factors influencing change are the faculty, the students, institutional vitality, and institutional receptiveness to change. For predispositions to change to be converted into action, the environment must be supportive. One of the elements of a supportive environment is one's perception of the prevailing philosophies of significant others on the academic scene. This paper reports on research which seeks to determine whether perceived institutional functioning and responsiveness to change is correlated with perceptions of the personal philosophies or orientations of significant others carrying out the same roles or reciprocal roles.

INTER-ETHNIC ATTITUDES IN EDUCATIONAL SETTINGS

Racial Attitudes of White University Freshmen

GLENWOOD C. BROOKS, JR. and WILLIAM E. SEDLACEK, University of Maryland

As our universities and colleges become increasingly multiracial, the attitudes of students of different races toward one another are becoming of primary importance. The purpose of this study was to assess the attitudes of white entering freshmen toward blacks. The Situational Attitude Scale (SAS) was administered to 470 white freshmen and differences between forms compared using t at .05. The results clearly indicate that white incoming freshmen have generally negative attitudes toward blacks. The implications of these findings for university planning and policy-making are discussed. These include a required course in intercultural relations, seminars and race related programs.

The Meaning of the Word "Integration" To Seniors in a Multi-Racial High School

LEONARD A. MARASCUILO and F. DAGENAIS, University of California

Integration means different things to different people. This paper examines the responses of seniors in a desegregated/integrated multiracial school to eight definitions of the word *integration*. Responses were analyzed across sex, race, socio-economic status, political affiliation of parents and self, and attendance at religious services. The acceptable definitions represented the high ideals of our society: open acceptance of other people, their racial and cultural heritage, and equal justice under law for all. The forced mixing of people and acceptance on the part of minority groups of the prevailing values of the majority group were rejected.

Students' Attitudes Toward School Consolidation

JOSEPH F. GASTRIGHT, University of Cincinnati; I. LEON SMITH, Yeshiva University

Questionnaires were administered to 9th grade students (N = 2400) involved in a major school consolidation involving an all black school system, and a suburban white school system. A stratified random sample drawn from the population was analyzed on 66 variables. Findings indicate that sex differences, and interaction between transfer condition and sex are not significant. The results suggest that significant differential perceptions of environment exist in large scale school interaction. Transferred students were significantly lower in S.E.S., grade expectations, and grades received. No significant differences were found in racial attitudes, self esteem, or educational aspiration.

The Effect of Race on Assertive Behavior in Small Groups

SUSAN STAVERT ROPER, Stanford University

The investigator focused on the most assertive member in small groups composed of two white and two black junior high school boys who worked together on a cooperative task. Contrary to predictions, she found: 1) black assertives were liked more and evaluated higher by their team members than white assertives; 2) there was similar tension and enjoyment reported in all groups; 3) black assertives did not display more "socio-emotional" behavior than white assertives. The cooperative nature of the task and the possibility of more positive attitudes of white American youth toward black Americans may explain these results.

Correlates of Racial Attitudes Among White High School Students

ELIZABETH L. USEEM, Boston State College

A number of correlates of racial attitudes are examined to determine whether the possible favorable effects of intergroup contact on white students' attitudes are counteracted by other factors. A questionnaire study of a random sample of 1,042 tenth grade students in eight northern suburban schools participating in an interracial busing program revealed that though certain forms of interracial contact are associated with more tolerant views, other forms are not. Furthermore, the negative influences on attitudes of having a low socioeconomic or academic status or being male are on the whole stronger than the positive effects of cross-racial association.

LEARNING AND CHANGING POLITICAL BELIEFS: COMPARATIVE RESEARCH PERSPECTIVES

Factors Determining Political Attitudes of Lebanese Students: A Longitudinal Study – 1961-1971

THEODOR HANF, Arnold-Bergstraesser-Institut, Freiburg i.Br., Germany

Data from surveys of 1961 and 1971 plus supplementary interviews with Lebanese university students show that secondary and university education determine political attitudes less than extraeducational factors. The strongest determinant factor is religious affiliation, while the intensity of religious attitudes determines the intensity of certain political attitudes. Since 1961, changes in the universities' recruitment patterns caused social stratum to increase as a significant factor; the gap between job aspirations and expectations increased considerably, particularly among students from low-income brackets. Among a minority of these, the gap is more significant than religious affiliation as a determinant for political attitudes.

The Educational Correlates of Violence: A Longitudinal Study of Malaysian Secondary School Students

JOHN C. BOCK, Stanford University

The first longitudinal phase of a research study that commenced in West Malaysia in 1967, is reported. Three factors are considered: 1) the relative influence of post-school socialization upon the attitudes of school-leavers; 2) the effect of the intervening racial violence (in 1969) upon the attitudes of the respondents; and 3) the educational correlates of reported endorsement of or participation in the violence of May, 1969. Those respondents who had experienced the greatest downward readjustment of their career expectations were most likely to score high on the general violence index and to endorse the violent events of May, 1969.

RADICAL DIMENSIONS OF EDUCATION

Equalizing Educational Opportunity

KENNETH CARLSON, Rutgers University

Inequality of educational opportunity is viewed as being primarily a problem of social class rather than of race. The inequality manifests itself in two main ways: social class groupings in the schools and uneven per pupil expenditures. Each of these ways will be illustrated by research findings and statistics. The interrelationship of the two forms of inequality will be discussed. Recommendations for removing these inequalities will then be presented. The recommendations are drawn from political scientists, government officials, educational and civil rights leaders. They go beyond the modest amelioration that has been attempted thus far to far-reaching alterations in the conduct of American education.

The New Plantation Mentality

ERNEST WASHINGTON, University of Massachusetts

For the most part, efforts to enroll Black students have been an unqualified failure because institutions are structured and operated by White middle class people. When "partial open admissions" is closed, administrators will wonder where things went wrong. This problem can be seen by examining a hypothetical forward-looking ex-slave-owner's view of his situation in the 1870's. In the decade after the Civil War he believed that Blacks were capable of considerable learning, particularly for their place in their society. University administrators of the 1970's have developed special separate programs for Black students: another dual education system where Blacks can develop skills to take back to their communities. This presentation will explore alternatives to the plantation mentality.

An Alternative Teacher Training Model: The Teacher as Catalyst in the New Social Order

THOMAS E. LINTON, University of Illinois, Chicago Circle

The teacher training model presented would carefully integrate five different and relatively equal components. These include: 1) cognitive development, 2) affective development, 3) area of specialization, 4) social systems analysis and change, 5) extensive community practicum, and 6) applied activity training. The components would be developed through the analysis of behavioral objectives, the objectives would then be developed into a curriculum extending over an eleven month period for each of four years of undergraduate education. This would mean combining the liberal arts component within the teacher education program in a wholly new approach to the development of professional teachers prepared to function as catalysts in the new social order.

Education Against Socialization

NOBUO SHIMAHARA, Rutgers University

In post-industrial society, school has become a powerful agent of socialization which compels the student to "learn" knowledge, skills, values, and attitudes central to the survival of technocracy. The ritualized process of socialization in the school does not offer multiple alternatives of experience but rather a severely limited linear frame of choice. Some critics of schooling as socialization interpret schooling not as socialization but as education which is more indigenous to the main stream of life and growing up. This presentation will examine positions which are currently discussed among students and educators, and present an argument for education against schooling as socialization.

Social Radicalism as a Framework for Education

JACK L. NELSON, Rutgers University

Current educational literature which purports to be radical is often superficial or anecdotal. Yet much radical education writing and school experimentation contains basic ideas also expressed in the long history of radical literature. The writings of contemporary critics of education like John Holt, Ivan Illich, and Paul Goodman draw from threads in the intellectual history of radical thought. There are social, economic, political, psychological, and philosophic implications for educational alternatives, just as there are educational implications from societal alternatives like anarchy, socialism and new leftism. Dissident literature of social radicalism provides a perspective for examination of educational alternatives.

RECONSTRUCTION IN THE RELATION OF SOCIAL SCIENCE AND EDUCATION

Reconstruction in the Relation of Social Science and Education

JAMES J. BOSCO and STANLEY S. ROBIN, Western Michigan University

This paper is a continuation of the analysis begun by Herriot and Corwin in their paper "Some Structural Constraints on the Relation of Sociology and Education." An analysis is developed which takes issue with the conclusion that educational research must be conducted in basic and applied university research institutes. The discussion is expanded to include all social sciences and the active collaboration of school systems in educational research. The analysis is based on the Grand Rapids Public schools – Western Michigan University Center for

Educational Studies, which has been engaged in inter-disciplinary, inter-institutional educational research since 1968.

SOCIALIZATION PROCESSES AND STUDENT VALUES

Attitudinal Modernity, Classroom Power and Status Characteristics: An Investigation

MARLAINE LOCKHEED KATZ, Stanford University

This study investigates the relationship between student power and prestige and student sense of attitudinal modernity. One hundred and fifty students in integrated schools were observed in the classroom and surveyed for their attitudes regarding political and occupational efficacy, overall modernism and expectation for success. Verbal initiation rate was used as a measure of power and prestige. Race, sex and social class were found to be significant explainers of verbal initiation, which was significantly related to attitudes. At the classroom level, integrated schools appear to reinforce stratifications of the larger society rather than to mitigate their effects. Interventions are needed.

Cliques: Education by Peers

SANDRA B. DAMICO and HELLEN I. GUTTINGER, University of Florida

This study's purposes were: 1) to observe and plot the incorporation of new black and white students into the informal social structure of a high school; 2) to identify the demographic and attitudinal characteristics of the various cliques; 3) to relate clique membership to academic achievement and social adjustment; and 4) to assess negative and positive consequences of clique membership. Clique structures were identified by observation; teacher and student interviews provided additional information about attitudes within cliques and interests outside of school. School records provided demographic data.

Teachers' Perceptions of Ideal Male and Female Students: Male Chauvinism in the Schools

A. J. H. GAITE, University of Wisconsin

Fifty high school teachers (25 male and 25 female) were given idealized descriptions of male and female students and invited to describe the students subsequent life and career. The results show that teachers have significantly greater and wider ranging expectations for male students than for female. Teachers seemed rarely able to perceive anything except marriage and child bearing for any of their female students. The results suggest that a major reason for poor school and post-school achievement on the part of female students is the very limited expectations that teachers have for their female students.

The Moral Explanations of Teachers, The Moral Development of Students

LEONARD BERK and KAREN FOX, Stanford University; LEONARD J. WAKS, Temple University

There is some evidence that students see the classroom as a weird moral environment. This study is concerned with identifying the constraints which the school, as an agency of moral socialization, imposes on students and uses the Kohlberg scales as an index of the impact of those constraints on moral development. The levels of moral explanation that teachers offer to, and accept from, their students are compared with the level of explanation that students believe they can expect from, and may prudently offer to, teachers. Preliminary results are pending.

Aggressive, Underachieving, and Well-Adjusted Children's Attitudes Toward Teachers, Subject Matter, and Each Other (Grouped by Race and Behavior)

FRANK P. BESAG, University of Wisconsin, Milwaukee; JAMES BEST, University of Washington

This study investigated the attitudes of children in a newly integrated school. Each of 18 teachers was asked to choose one well-adjusted, one underachieving, and one aggressive child. All three groups were asked about their peers, subject matter, teacher and discipline system. The three groups differed markedly in their attitudes with well-adjusted being most tolerant of peers, subjects and teachers and underachieving youngsters being least so. All were racially more tolerant than their parents and saw their teachers as liking those children who were quiet, neat, obedient and smart. The children's likes did not match those of the teachers.

SOCIAL AND POLITICAL ATTITUDES AND VALUES OF UNIVERSITY STUDENTS

Determinants of University Students' Political Attitudes or Demythologizing Campus Political Activism

ROGER L. RIFFER, LeMoyne College

This paper presents a critical evaluation of hypotheses about the determinants of university students' political attitudes, based upon an empirical study of 1,034 American male, Harvard University graduate students. (Political attitudes were related to American involvement in Vietnam.) A student tended to be "dovish" if his father was politically liberal, if he valued self-actualization rewards, or if he did not value extrinsic rewards. These findings support, in part, Newcomb's and Flacks' theories of student political socialization. No evidence was found for parental permissiveness, adolescent rebellion, the draft, or subversive agents as determinants of university students' political attitudes.

Machiavellianism, Moral Maturity, and Academic Performance in a Political Crisis

PAUL J. POPPEN and HENRY A. ALKER, Cornell University

During the Cambodian crisis the Cornell University faculty adopted a resolution creating a situation with new academic structures. Students were given a wide range of choices for completing their courses. Personality (Machiavellian and Kohlberg's moral development) and academic work data were collected from 88 students. Hi-Machs improved their final grades from their average prior to the faculty decision significantly more than did lo-Machs. Students at the authority maintaining moral development level were less likely to receive incompletes and more likely to do additional work.

Role Concepts, Philosophies and Attitudes of Students in a Special Living-Learning Environment

DIANA L. VEITH and HARRY SCHUMER, University of Massachusetts

This descriptive study proposed that students in a living-learning community would be more liberal in their attitudes, less traditionally oriented and more frequently "hippie" and activist in philosophy than a control group from the larger university. Females were anticipated to be more traditional than males. 100 males and females from a living-learning community and an equal number of control, drawn from the introductory psychology class, were administered Attitude Inventory, Student Preference Schedule and Philosophy of Life measures.

The Attitude Inventory and SPS seemed to support the hypothesis. A surprisingly large percentage of the total population preferred self discovery philosophies.

THE SOCIAL CONTEXT OF DIFFERENTIALS IN EDUCATIONAL ASPIRATIONS

Locus of Control and Levels of Aspiration in Black and White Children

JOSEPH P. DuCETTE and STEPHEN WOLK, Temple University

The effects of varying social milieu upon personality and related socio-educational behaviors were examined for 900 black and white school children in both secondary and elementary schools. An analysis of these behaviors indicated significant differences between the different social groups studied. These differences, however, were not directly manifested in the personality variable assessed (locus of control) but in the interaction between this variable and the different environments investigated. The implication of these findings for the use of locus of control as a predictor of behavior in varying environments was discussed.

Social Class, School Bureaucratization and Educational Aspirations

BARRY D. ANDERSON, Washington University

This study is an attempt to determine if educational aspirations are modified by the degree of bureaucratization found in a school. Briefly, it is hypothesized that there is a causal chain linking social class, school bureaucratization, and student alienation to aspirations for further education. Measures of social class, school bureaucratization, alienation from school and aspirations were obtained from 3,792 high school students. Relationships between the four variables are examined by means of path analysis and two-stage least-squares regression analysis. The data indicate that the notion of a causal chain is correct. However, relationships between the variables are small.

The Role of Socioeconomic Status and Significant Other Influence in Determining Educational Aspirations: A Black-White Comparison of Southern High School Seniors

J. STEVEN PICOU and JERRY P. WALKER, Ohio State University

The primary objective of this study is an analysis of the differential influence socioeconomic status and "significant others" have on the educational aspirations of black and white youth. A basic causal model is developed from related theoretical and empirical research and is tested by path analytic techniques. The path models reveal that the independent effect of significant others on educational aspiration is considerably stronger for the white youth in the sample of over 3,000 southern high school adolescents. These and other findings suggest that a lack of significant other influence may have adverse consequences for the educational attainment of southern black youth.

Students, Teachers, and Educational Expectations: Reciprocal Effects at Three Points in Time

TREVOR H. WILLIAMS, Ontario Institute for Studies in Education

The extensive literature on educational expectations points to parents and peers as prime socializing agents in the development of educational goals in adolescents. However, the effects of teachers have been ignored and, moreover, the effects of the student as a socializing agent himself have been examined only rarely. In addition to these deficiencies there is a general lack of knowledge on how the effects of socializing agents change over time as the adolescent develops. This investigation presents a causal model incorporating student-teacher reciprocal effects at three points in time. The parameters of the model are estimated via path analysis.

SOCIAL CORRELATES OF SCHOOL PERFORMANCE AND EDUCATIONAL EFFECTIVENESS

Effects of Knowledge of Criterion Groups on the Test Performance of Negro and Mexican-American Students

THOMAS D. OAKLAND and EDMUND EMMER, University of Texas

Previous research has indicated that knowledge of the criterion group differentially affects test performance of minority group members. The effects which knowledge of the criterion group has on the test performance of eighth grade Negro and Mexican-American *S*s were examined. There was no evidence that comparison with one of four norm groups affected performance through either an aptitude-treatment interaction or through an overall treatment effect. Data on expected performance indicated a significant aptitude-treatment effect with Negro students only. These results suggest that knowledge of a criterion group may not consistently alter the test performance of persons from minority groups.

An Exploratory Study to Determine the Effects of Generalized Academic Performance Expectations Upon the Activity and Influence of Students Engaged in a Group Simulation Game

DAVID E. HOFFMAN, Southern Oregon College; ELIZABETH G. COHEN, Stanford University

Based on performance characteristic theory, it was hypothesized that even in a non-intellectual, non-academic simulation game the level of *perceived* academic status of players, relative to that of teammates, would predict task-related verbal behavior. Junior high school boys (N = 156), divided into three levels of perceived academic ability served as subjects. Observers tabulated the verbal performance of each subject on three task-related criteria: (1) gross initiation, (2) unique suggestions, (3) successful influence. Comparisons of mean percentages of total team task-related acts contributed by subjects of each level of perceived academic ability within and across conditions supported the hypothesis.

What Do We Know About Educational Effectiveness

HARVEY AVERCH, STEPHEN J. CARROLL and THEODORE S. DONALDSON, National Science Foundation; JOHN PINCUS, Rand Corporation; HERBERT KIESLING, Indiana University

What is now known about the determinants of educational effectiveness? The objective of the study is to determine the extent to which any of the resources, techniques, processes, and organizations now being employed in primary and secondary education have an impact on student achievement, defined broadly. The authors conducted a critical examination of the many strands of educational research including anthropology, economics, political science, psychology, and sociology as well as the discipline of education proper. The results of the investigation are organized according to five basic research paradigms determined by questions about educational effectiveness and research methods employed.

Family Openness and School Performance

FRANK V. MAIDMAN, Ontario Institute for Studies in Education

This is a study of the openness of the family system and its relation to educational performance. A review of the literature on the family antecedents of school performance reveals the relevance of the family's relations to kin, friends and organizations for school performance. The study conceptualizes selected dimensions of the family's internal and external openness and relates each to several measures of functioning in the educational role. Data are obtained from a sample of seventy families with at least one adolescent in school. The locale for the study is the Borough of East York in Toronto, Canada.

STUDENTS' SELF CONCEPT AND SOCIAL VARIABLES

Changes in Academic Roles of Black and White Compensatory Education Students and its Effects on Self-Concept-of-Academic Ability

HENRY D. OLSEN, Ohio University

This research applies Brookover's social-psychological theory of learning, and utilizes Brookover's Self-Concept-of-Academic Ability Scale, for evaluating what effect changing academic roles has upon the self-concept-of-academic ability of 121 black and white compensatory education students. Results indicate that when a former compensatory education student compares himself with another former compensatory education student, he perceives himself to be superior academically. Whereas, when a former compensatory education student compares himself with a regularly enrolled college student, he perceives himself to be equal to him academically.

Cognitions of Self and Student Decision-Making

ROBERT W. BILBY and EDSEL L. ERICKSON, Western Michigan University; WILBUR B. BROOKOVER, Michigan State University

A theoretical model of self is presented which treats student decision-making as the major dependent variable. Decision-making is conceptualized as the interpretation of, and attribution of meaning to, events and objects in the social environment. Role-specific self-conceptions are viewed in terms of three categories: (1) self-concept of ability; (2) cognitions of intrinsic value of role; (3) cognitions of instrumental value of role. The contribution of parental variables to various self-conceptions is assessed. As a result of a student questionnaire survey and parental interviews, tentative empirical support for this model of self is reported.

Self-Concept and Students' Future Educational Plans

W. SCOTT FORD and DONALD MUSE, Florida State University

This paper examines the relationships between students' self-concept and their future educational plans. The respondents are 930 degree candidates at Miami-Dade Junior College and 2,453 public high school seniors in Miami, Florida. Analysis supports conceptualization of a student self-concept which operates as an intervening mechanism between the influence of socioeconomic background and educational plans. Students with better self-images plan longer-range educational careers, and the evidence strongly suggests that they actually proceed through the educational system while students with poor self-concepts select themselves out of the system. Several interesting results are presented for black and Spanish-speaking students.

Perceptions of Self and Others as a Function of Ethnic Group Membership

JAMES G. COOPER, University of New Mexico

Self-concept and perception of others were measured with a semantic differential scale including concepts as: "Teachers", "Me as a Student", "White Students", "Negro Students", etc. All 12th grade pupils from 14 rural New Mexico and 2 Texas schools responded. The sample included 407 Anglos, 300 Chicanos, 157 Indians, and 52 Negroes. Most concepts received favorable ratings. Negroes were consistently most favorable, while Indians were negative in 2 areas. All groups rated themselves highly, but tended to look down upon the other 3 groups.

TEACHERS AND TEACHER TRAINING: SOCIAL CHARACTERISTICS AND SOCIAL PROCESSES

Teacher Credibility and Parental Involvement in School-Related Activities

ROBERT D. MENDELSOHN and EDSEL L. ERICKSON, Western Michigan University; WILBUR B. BROOKOVER, Michigan State University

This study examines the extent to which parental involvement in their children's schools is associated with parents' assessments of teacher credibility. Viewed as a threshold variable influencing social interaction, credibility was conceptualized as containing three components: expertise, believability, and trustworthiness. Controlling for school SES, parental interview data were collected from four low SES schools: two high achieving, one white, one black; two low achieving, one white, one black. Findings indicated a direct, although moderate, association between teacher credibility and parental involvement. Combining low credibility with parents whose children attended low achieving schools produced the greatest percentage of low parental involvement.

Expectations for the Role of Teacher: A Comparison of Future Teachers and Experienced Teachers

JOHN W. OSBORNE, University of Alberta

A role definition instrument was administered to experienced and future teachers at the Universities of Wisconsin (Madison) and Houston in an attempt to identify areas of conflict between the expectations of these groups for the role of teacher. The factors of Conformity, Autonomy, Discipline and Communication accounted for 30.4% of the instrument variance. The Madison groups differed significantly only on Discipline ($\rho < .001$). The Houston groups differed significantly on Confromity ($\rho < .05$), Autonomy ($\rho < .025$) and Discipline ($\rho < .001$). The one significant regional difference for teachers was on Conformity ($\rho < .001$), while there were significant regional differences for future teachers on Conformity ($\rho < .001$) and Autonomy ($\rho < .001$).

The Stanford Secondary Teacher Education Program 1959-1969: II. Prediction of Graduate Career Patterns

RICHARD J. SHAVELSON, ROBERT L. TRINCHERO and GEORGE N. SOUSA, Stanford University

This study examines selection and training variables which may predict survival of teacher trainees. Careers of 709 interns were studied; 506 women and 203 men. Criterion variables were: (a) classification of interns into "Education" or "Non-education" careers, and number of years in (b) secondary teaching and (c) "Education." Predictor variables were GPAs, GRE scores, sex, age, C & I area, etc. Misclassification ranged from 17-37% when predictor variables are used to classify interns into "Education" and "Non-education" groups. Survival curves indicated a greater proportion of men than women remain in teaching and/or "Education." A major shift from secondary teaching to "Education" occurred after three years of secondary teaching.

Teacher Education Is A Four Letter Word

ROBERT H. KOFF, Stanford University

This paper develops a precise statement about the current state of teacher education. A review of the literature on current and "model" teacher education efforts and research on teaching defined contemporary and societal forces affecting training programs and revealed: (a) there are few, if any, skills of teaching whose superiority can be counted as empirically established, and (b) that there are few authentic differences between programs designed to train teachers to work in urban areas from those training teachers for suburbia. Discussion concludes with presentation of six functionally interdependent conceptual areas that are thought to have potential for formulating and identifying teaching skills.

Professionalism in Teaching Teams: Problem Focuses and Problem-Solving Modes

SHEILA R. F. MOLNAR, Stanford University

This paper inquires into the extent to which teaching teams use professional expertise in planning instruction, and the extent to which team teachers exhibit professional behaviors such as requesting and offering advice, assistance and evaluation. Recorded team planning discussions were analyzed using the Teacher Professionalism instrument developed for this purpose. Results include description of teams in terms of (1) problem focuses, (2) problem-solving modes, and (3) behavior as professionals, relationships between these variables, and variations in these variables among different teams.

Professional Socialization in Teacher Training Programs

PAUL R. DOMMERMUTH, State University of New York, Fredonia

This longitudinal study is concerned with the sociological nature of teacher training in three programs. Using taped interviews supplemented by extensive fieldwork, the paper reports on a major portion of a comparative socialization model designed to chart the course of socialization in professional programs. This segment of the model involves the staffs' views of their own professional identities, their overview of the training process, descriptions of how their activities fit into this process and, finally, their evaluations of the programs' outcomes. The data indicate the need for revisions of our conceptual models *and* innovations in our training programs.

SYMPOSIA

ALTERNATIVES FOR FUNDING HIGHER EDUCATION

GREGORY P. MALTBY, University of Oregon, ORGANIZER

The Objectives of the Symposium are: 1) to provide a discussion of various plans and basic issues involved in aid to individuals versus direct institutional aid, and 2) to evaluate plans to air opposition to the plans.

John Wish, Associate Professor of Marketing, University of Oregon, will present the paper, "Marketing and Financing of Higher Education, With Special Reference to Vouchers: A Case Study in Oregon – Advocacy of Experimentation with Vouchers for Post-Secondary Schooling in Oregon."

John E. Coons, Professor of Law, University of California at Berkeley, will discuss, "Aid to Individuals versus Aid to Institutions – A Discussion of Basic Issues and Results of these Two Policy Alternatives."

Ben Lawrence, Director, Western Interstate Commission on Higher Education, will discuss, "Determination of the Cost of Undergraduate Instruction: A Factor in Decision Making for Alternative Funding."

Gregory P. Maltby, Assistant Professor of Educational Administration, University of Oregon, will present the paper, "The Nature of the Opposition to Aid to Individuals for Post-Secondary Schooling."

Finally, Virginia Smith, Assistant Director, Carnegie Commission on the Future of Higher Education, will discuss, "A Review and Justification of the Recommendations of the Carnegie Commission Regarding the Funding of Higher Education."

In recent years the legislatures of several states have been increasingly rebuffed by voters on various tax measures – whatever the form. The result of this rejection has been indecision at the seat of the government and/or reduction of expenditures in areas that are deemed essential by many people. Formal education is one of these areas or services that is facing serious cutbacks. *And the part of the educational effort that appears most vulnerable is higher education.*

This poses a particularly difficult problem because present enrollments in the nation's secondary schools suggest that the number of potential college freshmen will continue to increase for the next few years. It appears that unless we are willing to surrender the notion of advanced education for all who wish it, the several states are faced with the necessity of cutting back in some fashion or of adopting feasible alternatives.

Locked in, as we generally are, to one format of schooling, reduction in expenditures usually results in closing the door to students – out-of-state admissions first and restrictions on in-state students next. This procedure is particularly unfortunate because it occurs at a time when some efforts, however small, are being made in compensatory education for minority groups at a number of institutions throughout the country. These efforts, encouraged originally by federal money will very likely be the first to go, or to be drastically reduced, as they become increasingly dependent on local resources. Innovative programs of all kinds—those dealing with financial aids and those concerned with substantive changes—are the first to fall victim to belt-tightening. The system tends to perpetuate the standard, on-going programs in a period of reduced support.

There is also the obvious problem of providing the variety of educational programs necessitated by increasing societal demands of the 1970's and beyond. At a time when educational imperatives are escalating and financial support is seriously restricted, it is clear that plans for preserving and providing a maximum of diversified programs for our youth must be made with extreme care.

Recently released figures show that while enrollments have been increasing at *public* institutions of higher education, the proportion of students has been decreasing at *non-public* institutions in the nation. Few private schools are well endowed, and many of those in the nation have shown deficits in recent years. In the process of raising tuition and fees to make ends meet, these schools have begun to price themselves out of the market. The nation may soon face a severe drop in the plurality of institutions of higher education.

On the other hand, until very recently, there has been continued expansion of capital construction on the campuses of public institutions of higher learning. There are those within the public sector who continue to claim that additional physical expansion is needed. Given the unused space in non-public institutions, it may be that these claims are not totally justified, and that better utilization of facilities might be made. If we assume that efficient and effective allocation of the limited resources available to higher education is desirable, it would seem that some means should be found to encourage a shift of students from the public to the private sector.

Many would argue that changes in the financial mechanism constitute mere "tinkering" with the problems facing higher education today and that such changes fail to reach the level of genuine educational reform. Some contend that if desirable reform is to be facilitated, some strong motivating force must be provided. The public is, and ought to be, concerned with the forms of support as well as the content of higher education. It is the contention of a small but growing number of persons that individuals should be actively involved in the decisions about how and where money might be properly spent for their own education and/or that of their children.

These then are some of the issues and arguments that constitute the case for an examination of alternatives for funding higher education. It is our hope that this symposium will provoke discussion and further research toward the generation of public policy dealing with the funding of higher education.

EDUCATIONAL ANTHROPOLOGY – STUDIES OF NON-U.S.A. CULTURES

RICHARD L. WARREN, University of Kentucky, ORGANIZER

This symposium presents the results of field studies of schooling in a variety of cultural settings. In varying degrees the papers are concerned with the internal life of single schools and classrooms and with the community context of education. They share attention to the impact of traditional educational structures and processes on the educational careers of students and provide insight into the acculturating role of the school in the midst of socio-cultural change. In general the authors have in their research shared a common methodology, direct observation and participation at a site over an extended period of time. They move beyond formal renditions of the educative process to the interaction between the people engaged in educative matters and to the complexities of the cultural settings in which the schools are located.

Robert Gurevich of the University of Pittsburgh in his paper, "Language, Primary Education and Social Mobility in Rural Northeast Thailand" focuses on content, method and student-teacher interaction in a rural northeast Thai primary school, with particular emphasis on the language arts program. He concludes that insofar as the academic program of the school is concerned inadequate language preparation is an important factor in the inability of children from the rural Northeast to compete successfully with urban children from the same region, much less with those from the dominant Central region of Thailand.

Shulamit Decktor Korn of Brooklyn College in her paper, "Conflict Arising from Student Autonomy in a Kibbutz High-School," presents a structural-organizational analysis of some problems arising in a *mosad,* a kibbutz high school based on the principle of student autonomy under the ideological direction of adult educators. She views the principle as a contradictory requirement and the source of considerable conflict.

J. M. Seymour in his paper, "The Rural Primary School and Rural Development Among the Iban of Sarawak, Malaysia," reports on a study of a primary school with an enrollment of 150 students and 5 teachers in an Iban community of 1200. His focus is on how the school functions to enable rural youth to participate productively and meaningfully in the process of rural development. He concludes that the contributions of the rural school to the achievement of this goal are meager. Rather than prepare rural youth for life in rural areas, it contributes to the migration of rural youth to urban areas or provides the majority of students with a substandard education.

Peter Sindell of McGill University presents the paper, "Show *OR* Tell: Conflicting Approaches to Teaching Cree Indian Children." The Cree Indians of Northern Quebec still depend primarily upon hunting, trapping and fishing for subsistence. What their children have to learn to function in the traditional society is vastly different from what they experience in the provincial or federal schools they are required to attend. The paper delineates some dimensions of this contrast with particular emphasis on the respective parent and teacher roles of modeling and on the function of direct visual learning and mediated verbal learning. The implications which differences in teaching and learning styles have for the formal education of the Cree Indian children are described.

Education is a cultural process. In every cultural setting it is in a real sense an instrument of survival and should therefore function also as an instrument for adaptation and change. The education of youth, including provisions for a meaningful flow of educational experiences within institutions and appropriate transitions between institutions are concerns increasingly common to most nations–but structured by diverse cultural traditions and instrumental roles. The cross-cultural emphasis of this symposium provides a basis for a comparative analysis leading to generalizations about the role of the school in a changing socio-cultural context.

THE SCHOOL SOCIOLOGIST: A NEW ROLE FOR THE PUBLIC SCHOOL

BERNARD SKLAR, University of Southern California, ORGANIZER

The purpose of this symposium is to discuss the prospect and the possibilities of placing a sociologist in the public schools. For a number of years now, school systems throughout the country have had, as a functioning member of their staff, someone called the school psychologist. It has been his job to deal with the problem of the individual student as it relates to his integration within the public school system. In more recent times it has become clear that the schools face problems of a different sort; problems that involve community groups, social action agencies and militant students, parents and teachers. These problems are essentially sociological in nature. To deal with them, the chairman of this symposium has proposed that a new role be institutionalized within the public school called The School Sociologist. Using this statement as a focal point for their discussion, the members of this symposium will debate not only the feasibility of such a role but how in fact it would be carried out, what it would entail and how individuals would be trained to handle it.

Professor Roald F. Campbell of the School of Education of Ohio State University has entitled his remarks as "The Sociologist in a Larger Context."

Professor Robert Dreeben of the Graduate School of Education of the University of Chicago, will take the position, "The School Sociologist: A Pessimistic View." Although in many respects a point of view which is critical of this concept, Professor Dreeben's conclusion, formulated in his own words, would be that "What sociology can contribute to school systems will depend largely on the way they are connected with those systems (as employees, consultants, etc.), on the nature of the questions to which they address themselves, and on the state of the knowledge in sociology."

Dr. Neal Gross, Dean of the Graduate School of Education of the University of Pennsylvania, has labeled his argument as follows: "The Sociologist: A Crucial Member of a Multi-Disciplinary Approach to the Solution of Problems in the Public Schools." It is Dr. Gross' conclusion that "A sociologist in the public school must be acutely aware of the complex nature of educational problems and the fact that his contribution only constitutes a single component of a multi-disciplinary approach to these problems."

Robert Baker, a graduate student at the Ontario Institute for Studies in Education, and a former public school teacher has elected to argue that "The School System Needs the Sociologist." It would be Mr. Baker's position that the sociologist is in a unique position to assess and analyze two functions which have characteristically been neglected in the school system; firstly, those structural and affective variables which impinge upon intra-system functioning, and, secondly, the system's relationship and interaction with the broader society.

Clearly, the implications of this symposium are largely practical. We are talking about an idea that has been discussed in educational circles for some time but one that has received less than adequate attention by the academic community. With the mounting concern about public education in the United States and Canada, and the pressure for schools to meet the demands of militant bodies both within these institutions as well as without, it seems imperative that sociologists apply themselves to the question of how they, as students of man in his cultural, social and political setting can help schools respond to these problems. Perhaps the role we have suggested, that of the school sociologist functioning as a member of the school staff, is not the appropriate one for sociologists at all. Perhaps it would be best for sociologists to set up alternative "input systems," such as consultant services maintained under an independent corporate structure and feeding into the school system on a fee-for-service basis. Only an open discussion on the question and its implications can help us know. That is why we have suggested this topic and framed it in the way that we have; that is, in terms of having a sociologist taking the most direct route imaginable to service within the public school. Bringing talented and articulate men together to discuss the potential for such a position should not only help bring this issue into sharper focus intellectually, but it could also conceivably make for a wider awareness of the problem and help mobilize the kind of public awareness and support that would be essential to its ultimate success.

URBAN SCHOOLS AND THE ANTHROPOLOGIST

STASE P. McPHERRON, Duquesne University, ORGANIZER

The anthropologist's view of a complex society as composed of interlocking, often conflicting segments, will of necessity have to address itself to the relationship between these ethnic and social groups and much mainstream institutions such as the legal system, the social service apparatus, political structures and the educational system. It is the anthropologist's goal to relate individual student and teacher to their social role, ethnic group, community and nation. To accomplish this the last several years have seen anthropologists becoming increasingly involved with urban problems and more specifically the urban school. The range of involvement is quite broad. Urban community studies undertaken by anthropologists have viewed these communities most often with the culturally pluralistic model mentioned above.

Charles Valentine (Brookdale Hospital Center) discusses the prevailing models used to describe the culture of one particular ethnic group—Afro-Americans. He rejects both the biological and culture-deficit models. The underlying assumptions of the culturally different model he sees as incorrect and even harmful, particularly with regard to educational policies and programs. As a result of his ongoing fieldwork in Harlem he proposes that educators be made aware of the culturally pluralistic model. A bicultural educational model recognizes that many blacks are committed to both a Black culture and the mainstream culture and they need not be mutually exclusive.

A fundamental aspect of the ideology of public education is the premise of gradual elimination of differences and an absorption of children from all sectors of society into mainstream society. Recently there has been resistance to assimilationist views by blacks, Mexican-Americans, and Indians. Carol Talbert (Syracuse University) will present a paper on "Ethnic Pluralism in the United States Culture and Its Meaning for Education," in which she examines economic and political factors of this "ethnicity" in the black urban community and its ideological tenets. In conclusion she points out the necessity of educators to accept these values and behaviors of various ethnic groups and neither be intimidated by them nor look upon them condescendingly.

The urban classroom has served many disciplines as a laboratory for the study of black language and rhetoric. Nancy Modiano (Catholic University) reports on a pilot project recently completed by herself and her students on black inner-city school children in Washington, D.C. The hypotheses which she will present will lead to some provocative discussion as she concludes these children do develop intelligence despite the work of Jensen and others.

As anthropology is increasingly taught in undergraduate programs and even in secondary schools, problems arise not only with regard to the preparation of curriculum materials for this level but content itself presents a challenge. What of the myriad possibilities of cultural anthropology does one teach to a generation of non-graduate students who do not plan to become anthropologists. Alice Troup (Mt. Lebanon High School) found her teaching of anthropology changed following a sabbatical to earn an M.A. in anthropology. The new approach which she has worked out has been to involve her students in studying aspects of their own community and particularly the various aspects of youth culture, using the models of anthropology. She concludes that what seemed most beneficial to high school students as human beings, was the use of anthropology as a tool for greater personal understanding of the real world.

In the area of teacher training, anthropologists have long had an interest in what is communicated in various world culture courses as well as the newly developed anthropology courses. This involvement has usually been on the level of preparing curriculum materials. More recently, however, the actual training of undergraduate and graduate teachers in anthropological concepts and insights has begun. Stasé McPherron (Duquesne University) will present a paper on "Anthropological Roles in Teacher Training—The Meeting of Two Cultures" in which she will report on some recent work with graduate education majors. The problems which education students had in grasping cultural principles, a tendency to personalize rather than generalize, the expectations which the graduate education school imposed on its students, career involvement and knowledge and ability to operate within the public school system with all its frustrations were explored in a graduate seminar. Later these themes were further examined in group and individual interviews. Professor McPherron feels she traded her knowledge of the workings of cultural systems for insights into the cognitive style of teachers.

The three discussants of this symposium are: Dr. Fred Erikson of Harvard University who has published in the field of black language and rhetoric; Dr. Estelle Fuchs of Hunter College whose publications on urban schools include "Pickets at the Gate" as well as "Teacher Talk;" and Mr. Gerald B. Glynn, organizer and principal of the urban free school "New City School" in St. Louis.

WOMEN AS EQUALS: INTERDISCIPLINARY PERSPECTIVES FOR EDUCATIONAL RESEARCH

CAROL KEHR TITTLE, City University of New York, ORGANIZER

The purpose of this symposium is to focus the views of various disciplines on sex differences, and to consider the resulting implications for educational research. Along with social changes in other areas, the current women's movement provides a challenge to education and educational research to reexamine traditional practices and assumptions.

Interdisciplinary perspectives will be provided by an examination of the problems of values and bias in research; an analysis of behavioral sex differences and their relation to educational practices; a consideration of sex roles in reading and literature; and an economic analysis of the returns to women from education. These analyses are of fundamental importance in providing a philosophic, educational, psychological and economic view of the system of thought and behavior within which sex differences presently exist and within which educational research occurs.

"Prejudice Against Women and Bias in Educational Research" will be presented by Elizabeth Steiner Maccia, Indiana University. The purpose of the paper is to present an analysis of how prejudice against women produces bias in educational research. The first part of the paper examines the ways in which values can enter into educational research. The second part of the paper argues that bias in educational research can result from each of these ways due to prejudice. In the final part of the paper, through exemplifications, the analysis is given meaning in the context of prejudice against women.

"Behavioral Sex Differences and Their Relation to Educational Values and Research" will be discussed by Carol Nagy Jacklin and Eleanor E. Maccoby, Stanford University. This paper provides an analysis of the various meanings of the terms "passive," "dependent," and "aggressive," and a review of confirmed and alleged sex differences on these dimensions. What is known and not known concerning the contribution of physiological factors, culture and education to these differences is discussed. Three education-relaxed sex differences are examined in relation to both generic sex differences and classroom pressures: tractability, self-esteem and fear of success. Implications are drawn for the design of educational practices and research objectives: Is the androgenous personality best? Is "different but equal" possible?

"Sex Roles in Reading and Literature" is the topic of Doris V. Gunderson, U. S. Office of Education. The paper will be concerned with sex roles in reading and literature. Traditional views will be examined with reference to research findings. Differences in reading achievement between the sexes have long been discussed in the literature. The paper will look at some assumptions concerning reading expectation and reading achievement of boys and girls. Some traditional views of sex roles in learning to read may militate against the reading achievement of boys. The teaching-learning situation will be considered; the fact that most teachers in the primary grades are women may be a contributory factor in the reading performance of both sexes. Sex-role stereotypes in reading materials, both textbooks and tradebooks, may be variables in several aspects of reading including motivation. The role of women in literature may also be examined.

"Returns to Education for Women" is the title of the paper by Lee Benham, University of Chicago. This paper discusses methods used by economists in calculating the economic returns to education and presents some comparisons of the returns to high school and college education for men and women. The implications of these estimates for women's levels of educational attainment and occupational choice are considered, along with a discussion of past efforts to predict these patterns. Finally, recent studies of the effects of women's education on nonmarket activity are considered, including productivity in the home, ability to operate efficiently as a consumer, the type of husbands women marry, and level of husbands' earnings.

Maxine Greene, Teachers College, Columbia University and Richard L. Turner, Indiana University will discuss these papers.

DIVISION H: SCHOOL EVALUATION AND PROGRAM DEVELOPMENT

PAPER SESSIONS

COMPENSATORY EDUCATION: EVALUATION PARADIGMS AND RECOMMENDED NEW DIRECTIONS

A Design for Evaluating Educational Programs for Culturally Disadvantaged Children

MAURICE D. FISHER, Stanford University; VIRGIL S. WARD, University of Virginia

This paper describes a comprehensive design for evaluating all important phases of educational programs for disadvantaged children. Thus, evaluative reference systems and criteria were constructed for examining educational objectives, instructional methods, implementation procedures and outcomes. These systems of analysis, etc., were derived from substantive information about human developmental processes, exemplary educational programs, and appraisal techniques and experimental designs which can produce results high in internal and external validity. It was suggested that this evaluation design is significant because it provides an effective means for conceptualizing programs, and producing more rigorous methods of evaluation.

A Study of ESEA, Title I Impact Components on Urban Elementary Schools and Their Pupils

EDWARD K. BROWN, School District of Philadelphia

An impact study of 16 Title I projects in 70 elementary schools was undertaken to determine whether specific subsets of projects produced differential performance effects. Four unique subsets (implementation models) were identified from four derived variables (school program density, school aggregate fund, pupil service components, achievement-growth differential score). The four operations and four demographic variables (school staff, pupil average daily attendance, per pupil and per teacher expenditures) were examined by a factor analysis procedure. A *School Density Expenditure* factor was identified which suggested that an evaluation of each model yielded more comprehensive pupil output data than did the aggregate.

Procedures for Comparing Instructional Programs

STEPHEN P. KLEIN, University of California, Los Angeles

The first portion of this paper discusses six important factors to consider in comparing the effectiveness of different educational programs, e.g., pupil performance on the objectives, relative importance of objectives, the number of objectives and their overlap, and program costs. The second section reviews the relative merits of current techniques for making such comparisons, e.g., standardized tests, "program fair" and "program free" approaches. The last section presents the rationale and operational procedures for a new general approach to this problem.

Critical Problems of Evaluation in the Great City Schools: Diagnosis – Analysis – Suggested New Directions

JOHN L. HAYMAN, JR., Pennsylvania State University; JOSEPH L. MAZUR, University of South Florida; RODNEY W. NAPIER, Temple University

The Council of the Great City Schools in 1970 surveyed its member districts to study Title I evaluation practices, identify special problems, and make recommendations for improvement. Data for the study were collected through: 1) a series of site visits during which relevant personnel were interviewed, management records reviewed, and ongoing programs observed, 2) administration of a questionnaire to research directors and federal program directors, and 3) a diagnostic conference, attended by research directors, federal program directors, other administrators, and teachers. A number of conclusions relative to changes needed to upgrade school research and evaluation practice are discussed.

DECISION INDICATORS IN THE EVALUATION OF PUPIL ACHIEVEMENT

Does It Matter Which Initial Reading Approach Is Used?

LAWRENCE C. HARTLAGE, Indiana University Medical Center

The investigation studied the effectiveness of three different approaches to initial reading instruction. A total of 1132 beginning first grade children were separated into three groups, of approximately equal readiness levels. Each group was taught by either a look-say, phonetic, or special alphabet method during first grade. At the end of first grade, all children were individually tested on word recognition skills, and an analysis of variance was computed among groups. Significant overall superiority in word recognition skills was demonstrated by the special alphabet group, with the phonetic group significantly better than the look-say group.

An Examination of Two Factors Related to the Usefulness of Performance Indicators

ROBERT A. FORSYTH, University of Iowa

The stability of Performance Indicators (PIs) for two consecutive classes within a given set of schools was investigated for nine academic areas and grades 9 through 11. In addition, some implications of the use of the particular computing formula were examined. The PIs proved to be relatively stable. Also, PIs were found to be of most value when the average school size was not too large and the multiple correlation was not too high.

Evaluating Inner-City Children's Achievement in Language Skills

EDWIN F. SAUSE, BOCES; FREDRICK E. MENZ, Educational Research Council

A culture fair technique was explored in evaluating the effectiveness of i.t.a. and T.O. reading programs to develop language skills in first grade inner-city black children. The more adequate program should produce students with greater expressional facility, which should be evidenced in *numbers* and *variety* of words used in oral and written language. Consistent differences between programs would recommend the technique as useful in evaluating elementary language arts programs. Culture fair stimuli and standard procedures were employed to elicit oral and written language samples. Under both modes of expression, i.t.a. pupils produced significantly more and varied words.

Correlates of Achievement

JERRY M. POWERS, St. Louis Public Schools; JON C. MARSHALL, University of Missouri, St. Louis

A study was conducted for the purpose of determining both individual and multiple relationships between several variables and academic achievement. Achievement was measured by subsets of the ITBS (Iowa Tests of Basic Skills), while the independent variables included both individual and school variables. Results consistently showed the highest correlates of achievement to be pre-ITBS scores and IQ. Significantly, but less closely related were School ADC Rate and

Race. A stepwise multiple regression technique resulted in correlations ranging from .62 to .89 with a median coefficient of .80. The best set of predictor variables included ITBS pre-test, IQ score, school ADC level, and sex.

Training Teachers to Enhance Reading Performance: An Evaluation of an In-Service Project

MARCIENCE S. MATTLEMAN and HOWARD E. BLAKE, Temple University; THOMAS J. CLARK and MARJORIE N. FARMER, School District of Philadelphia

This report will describe a one year Education Personnel Development Act project jointly administered by Temple University and the Philadelphia Schools. Its aim was the training of selected elementary teachers in using behaviors to enhance reading performance in a sample of 1,200 inner city children. Content and procedures of in-service training will be presented as well as data in which statistically significant gains were achieved on standardized tests, phonics inventories and informal Reading Inventories. Discussion will include program components stressing a language-reading approach, difficulties in the selection and use of tests, and problems of doing in-school research.

The Magic Ear: Another Approach to Automated Classroom Control

JAMES R. GEORGE, III, HAROLD R. STRANG and DOLLY L. GEORGE, University of Virginia

In an ABB research design, "excessive" noise outburst behavior of 24 second graders was effectively controlled under automated stimulus conditions. A voice operated relay transmitted signals to an automated combination light display and outburst time/total running time meters; under 2 conditions, the light display functioned first as a primary, then as a secondary reinforcer for "quiet" behavior. The mean outburst ratio dropped from 94.9% (Baseline) to 44.19% (Condition I) to 34.00% (Condition II). Such automated procedures can free the teacher to teach and can lower the chances that she may become an aversive stimulus.

Evaluation of Remote Input Devices for an Instructional Management System

JUDITH HOOPER and JOHN F. McMANUS, Southwest Regional Laboratory for Educational Research and Development

Source data automation (SDA) devices were evaluated for use in a computer-based instructional management system (IMS). Included were keyboard-to-tape, keyboard-to-disc, teletype, optical readers, touch tone devices, and interactive CRT terminals. Characteristics of the input data from the instructional systems to be managed were stated. Several IMS configurations were described, and the SDA devices were compared against criteria of cost, effective operation, and adaptability of use in a natural school environment. Conclusions indicated that several commercially available devices may operate effectively in an instructional management setting.

EVALUATION TECHNIQUES FOR IMPROVING TEACHER EFFECTIVENESS

Innovations in Teacher Education

MARVIN A. BROTTMAN, Governors State University

To determine the nature of the process and content of so-called innovative teacher preparation programs, forty-four programs were studied by use of questions derived from a conceptualization of teacher training as a psycho-social system. Literature describing the programs and responses of program directors shows that most programs contain the same process and content that existed ten years ago. Where changes are occurring, they involve students helping to determine both the process and the content of their programs. Flexibility in scheduling and courses centering on the real world are in the vanguard of change.

A Study of an Inservice Program of Evaluation in Escambia County, Florida Public Schools

G. MICHAEL BARRY, Tulane University

This study sought to determine the effect of an inservice education program of evaluation on school-based personnel as measured by cognitive testing (knowledge) and affective (attitudinal) instrumentation. The population of the study was twenty-four elementary principals and curriculum coordinators. The main topics covered were, federal requirements, evaluation and measurement, needs assessment, objectives, data processing, sampling and design, and statistics. An intercorrelation analysis of population variables is presented. A significant difference at the .01 level of probability was found in favor of the inservice participants over the control group on the criterion-referenced cognitive test measure, but not on the attitude measure.

Training System Development for Instructional Support Systems

NANCY E. YAMAN, FRAN L. LONGO and RALPH A. HANSON, Southwest Regional Laboratory for Educational Research and Development

Although a number of general models of instructional and training system development exist, none provides specific guidance in preparing training systems or in studying related issues. This paper presents a more detailed model of training system development, drawing upon research and development conducted at the Southwest Regional Laboratory. The paper presents a step-by-step guide to training system development and a framework within which research findings on training can be integrated.

Investigation of the Effectiveness of a Design to Initiate Curriculum Change

MARY B. KIEVIT, Rutgers University

This investigation was an endeavor to 1) design one specific approach to dissemination of information to practitioners with the purpose of motivating each to become an agent of change in a specific curriculum within the local school; and 2) through a quasi-experimental design to ascertain the extent to which the treatment was effective in promoting change. Subjects were a representative sample of 79 teacher participants in teacher-led workshops and a representative sample of 79 non-participating teachers. It was found that the design to initiate change stimulated twice the amount of adoption which could have been expected without this intervention.

Toward an Approach to Program Evaluation in Teacher Education

JEROME C. HARSTE, Indiana University

Selected graduates (N = 191) of the Master of Arts Degree Program were studied in an effort to investigate the viability of an approach to graduate program evaluation that looked at graduates of a program in terms of their professional career orientations. Student and program variables were aligned in an effort to identify the patterning of variables reflective of participants having like career orientations. Regardless of which comparisons were made between the groups identified, significant combinations of variables were identified. Since this approach to program evaluation is not institutionally bound, but rather self-adaptable to the particular program studied, further research seems warranted.

INTEGRATION OF EVALUATION WITH CURRICULUM DEVELOPMENT PROJECTS

Cooperative Curriculum Program Evaluation: Application of a Theoretical Curriculum Evaluation Model

DONALD E. RUSH, George Peabody College for Teachers; JAMES H. McELHINNEY and RICHARD C. KUNKEL, Ball State University

This study reports a systematic attempt at a cooperative curriculum evaluation in Northwestern Indiana involving 56,000 students, 2,500 teachers, and approximately 900 administrators in the Indiana suburban area of Chicago. The major objective was to systematically train and use classroom teachers and administrators in an attempt to operationalize a curriculum evaluation model. The data would indicate that competent professionals can be trained to play an effective role, their training can be utilized as an in-service component of an overall evaluation, and this cadre makes up a population of proprietorial professionals to deal with the final evaluation reports.

The Use of Formative Evaluation Procedures in the Development of a Mathematics Laboratory

GEORGE R. MILLER, University of Pittsburgh

This paper describes the application of the Lindvall-Cox Model for program development and evaluation to a primary grade mathematics laboratory developed in conjunction with the IPI Mathematics Program. Specifically, it details the formative evaluation procedures used in the Phase I tryout to refine the evaluation plan for the next development cycle. These "Evaluation Outlines," for both the Phase I and Phase II cycles, are included. By providing specific examples of procedures and results, this study attempts to make a contribution to the more widespread use of effective formative evaluation in program development.

Evaluation: Vocabulary Development Project, 1969-1970

JON C. MARSHALL, University of Missouri, St. Louis; ARTHUR DRAPER, St. Louis City Public Schools

The purpose of this study was to evaluate the effectiveness of the St. Louis Vocabulary Development Project (VPD) on children's language and reading skills. Nearly 900 fourth, fifth, and sixth grade classrooms were involved in the project. Data were collected from project prepared tests, the ITBS, and the Lorge-Thorndike. Factorial and correlational analyses of the data indicate that (1) increases in reading, spelling, vocabulary, and IQ were related to increases in VPD vocabulary and (2) the project seemed to have a greater impact on students in "black" schools than students in "mixed" and "white" schools.

Resource Support in the Development of Exportable Instructional Products

BARBARA R. LASSER, Southwest Regional Laboratory for Educational Research and Development

The development of research-based, classroom-verified instructional products requires the coordinated and sequenced activities of a variety of professionals, each performing specific, interrelated functions. This report identifies and discusses the types of resource service functions which have been required to support the Southwest Regional Laboratory's development of complete, exportable instructional products. Examples of an instructional product at each of three phases of development are provided, along with descriptions of the types of resource support, including liaison, training, subject procurement, instrumentation, production, data collection, reference, and documentation functions, which may be required at each phase.

The Development of a Training System for a New Instructional Program

DEAN R. LEE, Southwest Regional Laboratory for Educational Research and Development

General procedures for the initial development of any training system are discussed. These are: (a) identify the various categories of trainees (e.g., teachers, tutors, aides, parents); (b) conduct task analysis for each category of trainee; (c) from the task analysis determine the training objectives for each category of trainee; (d) group the training objectives into training components; (e) determine the most suitable medium for each component; (f) develop each component; and (g) evaluate and revise each component and the resulting training system. The development of the training system for the Language and Concept Skills Program for Spanish Speakers is used as an example throughout the discussion.

OBJECTIVE-BASED EVALUATION: SYSTEMS AND STUDIES

Overview of a System for Objective-Based Evaluation–Reading (SOBE-R)

RODNEY W. SKAGER, Center for the Study of Evaluation of Instructional Programs

If schools are to be held accountable, better means must be found for measuring the outcomes of instruction. Standardized tests are inadequate as tools for the evaluation of instruction. The System for Objective-Based Evaluation–Reading (SOBE-R) is an information system designed to replace standardized tests in many evaluation functions. SOBE-R incorporates a number of components which allow users to (a) select from a complete bank the objectives consistent with a given educational program, (b) obtain assessment instruments composed of items measuring the objectives that have been selected, and (c) receive summary reports on the assessment useful to a variety of audiences.

OBER – A Program for Objectives-Based Evaluation in Reading at the Newport-Mesa Unified School District

ROBERT C. OTTO, Newport-Mesa Unified School District

An objective-based evaluation system has been operationalized in the Newport-Mesa School District. Teachers in 36 schools used SOBE-R to select for each grade level objectives that should be mastered by 85% of the students. "Supplemental" objectives were also selected. Many teachers newly exposed to behavioral objectives became concerned about being held personally accountable by the district. A major problem is, thus, one of allowing for differences in expectations for schools based on differential student entry skills, etc., and at the same time allowing for generalizations about the district as a whole. A system permitting individual teachers to order assessment materials for each objective is being designed.

Evaluation – The School and Teacher

RONALD G. McINTIRE, Eastridge Community Elementary School, Denver, Colorado

At Eastridge Elementary School, evaluation has two facets. The first reflects where learners in the school as a whole stand on sequences of skills. The second informs the teacher of the standing of individual students on sets of objectives. An evaluation system in reading has been developed consisting of: (1) a comprehensive set of goals and objectives, (2) a formative school program information system and a similar system operating at the classroom or team level, and (3) a feedback system for parents. Additional development and research is needed on teacher training materials, classification systems for objectives, and summary evaluation of objective based evaluation systems.

A System for Educational Accountability in the State of Florida

JAMES C. IMPARA, Florida Department of Education

The Florida Department of Education has developed a program for educational accountability. During the Spring of 1971, 250 Florida educators used SOBE-R to select essential objectives in reading for grade levels 2, 4, 7, and 10. The procedure used provides a useful model for selecting objectives in other curriculum areas. Use of the SOBE-R system will have two major kinds of impact. (1) The Department has a means for comparing districts on the same indices. (2) All districts will be able to pinpoint the strengths and weaknesses of their reading curricula. Other problems still need resolution.

The Measurement of Congruence Between Learning Objectives and Test Items

THEODORE A. DAHL, Center for the Study of Evaluation of Instructional Programs

Objective-based testing is an alternative to standardized testing which is designed to overcome many of the shortcomings of the latter. Central to the validity of an objective-based test is the extent to which the items measure the objective for which they were written: objective-item congruence. Establishment of a method for measuring congruence is, therefore, a major task. Monotonicity analysis is presented as a method which will analytically derive groups of items which appear to be congruent to the same objective. Judgmental evidence is also provided to validate the results of the analytic method.

System for Objective Based Evaluation—Reading (SOBE-R): A Utilitarian Approach

JUDY C. BORGERDING, Center for the Study of Evaluation of Instructional Programs

The representation of any educational product may in most cases be accomplished by the presentation of data from users' evaluation of the product itself. SOBE-R users, in two California school districts, indicate selection of SOBE-R objectives, and exclusion of others, to be based on the degree to which objectives make a contribution to the instructional process in general, including curricular planning, sequencing of instruction, and selection of instructional material (in the broadest sense). Users value the system because it does provide for such contingencies, covers the skills and understandings required by reading, allows for individualization of instruction, and permits evaluation of pupil progress by the teachers themselves.

PHILADELPHIA SCALAR VALUES FOR SEMANTIC DIFFERENTIAL STUDIES

A Systematic Study of Attitudes Using the Semantic Differential: The Model

IRVIN J. FARBER and JAMES E. AYRER, School District of Philadelphia

Many programs undertaken in schools are concerned with attitude change. Attitudes are thought to be related to school performance. To investigate this area a project was initiated using the semantic differential.

Nine major project stages were identified: 1) Design OpScan Form; 2) write program to analyze data; 3) determine adjective pairs; 4) Factor Scales on elementary pupils; 5) Factor Scales on high school students, adults; 6) study psychometric properties of instrument; 7) Factor Graphic Scales; 8) develop semantic atlas; 9) study relationships between attitudes and school performance. Networks or work breakdowns for all stages have been completed. The first three stages are completed; the fourth is in progress.

A Semantic Differential Processing System

ELLERY M. PIERSON, School District of Philadelphia; TIMOTHY PETTIBONE, New Mexico State University

A semantic differential processing system was designed to economically facilitate the collection and analyses of large amounts of data. The collection form was designed on an optical scanning form which may be overprinted with random orderings of concepts, scales, and scale polarities. A FORTRAN program "unscrambles" the scale responses. The output includes an interconcept D-matrix for the semantic space and each dimension. The reordered responses are punched in a deck for input to other analytic programs.

The Semantic Structure of a Set of Scales Developed for Use with Inner-City Pupils

JAMES E. AYRER and IRVIN J. FARBER, School District of Philadelphia

In a previous study (McNamara, Ayrer and Farber, 1970) a set of 72 bipolar scales was developed based upon the language usage of inner-city pupils. In order to determine the underlying dimensionality of this set of scales, they were administered to a sample of 255 sixth graders. Since there were 112 concepts and 72 scales, it was decided not to have all concepts rated on all scales by all subjects. Instead, a matrix sampling approach was used. The results were compared with two previous studies and similarities and differences in the structure were noted.

Development of Semantic Differential Scales for Use with Inner-City Pupils

THOMAS C. McNAMARA, JAMES E. AYRER, and IRVIN J. FARBER, School District of Philadelphia

A group of 841 inner-city pupils in grades 4, 6, 7, and 8 were asked to write the words they would use to "tell about" 50 stimulus words. A total of 1,300 adjectives were obtained. Of these, 87 were retained for further study. These 87 were used as stimuli to obtain opposites from another sample of children. Of these, 72 had clear opposites or were retained for other reasons. Differences were noted between these 72 scales and those developed by other investigators based on other populations.

RESEARCH APPLICATIONS AND ACCOMPANYING ISSUES

Assessing the Micro-Environments of Individual Preschool Children

JOHN E. DOPYERA, Environmental Planning and Indexing Consultants, Syracuse, New York; MARGARET Z. LAY, Syracuse University

The paper reports the development and use of observational procedures for assessing the micro-environments of preschool children. Micro-environment, as contrasted with more global definitions and measures of environment, refers to the specific facets of a total environment and individual encounters. An initial study fully documented via observation the facets of program individual children were encountering and attempted to relate differential encounters to differential changes in children. A second study utilized the same procedures with some modification. The results of both studies are discussed in terms of implications for the characterization, design and quality control of programs for preschool children.

An Algorithm for Time Analysis

PETER F. WOLMUT, Multnomah County IED, Portland, Oregon

One possible accountability method is to set goals in terms of the kinds of work someone does (activities) and for whom he does it (clients). An algorithm is postulated that allows a diary of time to be summarized by activity and by client. Notation is defined. Examples of potential application to classroom and administrative office are given.

Utilization of Consultants in Inservice Training

WILLIAM C. THEIMER, JR., University of the Pacific

The misuse of outside consultants by most school districts has led to a disenchantment with inservice training in general. By using careful planning and evaluation techniques, the problems which have been caused by the inappropriate use of consultants and the unreal expectations of local school district personnel can be avoided. The process model described delineates the following steps needed to overcome this problem: specification of goals by local school districts; planning with school personnel regarding expected outcomes and work required; careful outlines of activities by the outside consultants; and well-planned evaluations of teacher and consultant behaviors.

Tests and Measurements for Early Childhood Education Programs

JOSEPH F. HAENN and THOMAS J. JOHNSON, National Program on Early Childhood Education

Tests available for children aged 0-8 were reviewed and analyzed to obtain the following information: title and source of the test (including author), type of test, appropriate age or grade level, scores derived (constructs, abilities, skills, etc.) and test specifics (cost, administration time, date of publication, date and kind of normative information, test forms, etc.). These characteristics were augmented with a resume concerning reliability, validity, and so on, and were indexed by title, type of test, age level, and constructs measured. A discussion of components, properties, and applicability of such instruments follows.

An Analysis and Revision of School Personnel Utilization Objectives

MARGOT A. OLSON and JACOB G. BEARD, Florida State University

An evaluation and revision of the USOE School Utilization Objectives (SPU) objectives was performed. A national sample of prominent educators was asked to evaluate the 14 SPU objectives by responding to a modified semantic differential instrument and by giving unstructured comments. Responses were generally favorable toward the objectives with most respondents rating them higher on worthiness than clarity. The data were used to produce a revised set of objectives.

RESEARCH TRAINING THROUGH A MULTIPLE SYSTEM CONSORTIUM

The Pittsburgh-Based Project to Train Educational R & D Personnel

GLEN HEATHERS, Learning Research and Development Center

The Learning Research and Development Center at the University of Pittsburgh, as part of a consortium of fifteen educational agencies, is the prime contractor for a project to design, conduct, and diffuse training programs for educational R & D personnel. Four training programs are under development and test, a long-term and a short-term program each in curriculum development and in the design and conduct of local educational change programs. Local change programs are the focus of the five papers that follow, recognizing that changes in instructional programs conducted by local personnel are the pay-off of educational innovation.

Individualizing the Training of Local Change Specialists

HIAWATHA FOUNTAIN and ROBERT F. NICELY, JR., Learning Research and Development Center

In the training programs, "educational guidance" includes provisions for considering the needs and learner characteristics of individual students. The guidance process includes recruitment and selection, program planning, personal/social counseling, planning and monitoring on-the-job experiences or internships, and job placement and follow-up. Educational guidance pays special attention to assessing and strengthening the trainee's personal/social qualities in relation to his job. Such qualities are difficult to modify in usual training contexts; personal counseling interviews are appropriate for helping the trainee with them. The counselor also is responsible for channeling the information he obtains to the training staff.

Making Local Change Programs Relevant to Students' Needs

JOHN L. MORGAN and ALFONZO WASHINGTON, Learning Research and Development Center

A central concern of educational innovation is making instruction relevant to the needs and learner characteristics of individual students. Current schooling often involves inappropriate learning goals, curricular materials, organization for instruction, instructional methods, and interpersonal relations at school. Training is offered for analyzing and improving instruction in relation to such themes as teaching problem-solving thinking, personal/social development, mastery of learning tasks, and individualizing instruction. Special attention is paid to training for making instruction relevant to the needs of children from minority groups. Aiding this purpose is the stress on recruiting trainees who are members of minority groups.

Methodological and Theoretical Bases for Designing Local Educational Change Programs

TODD SIMONDS and THEODORA ST. LAWRENCE, Learning Research and Development Center

To develop the methodology of designing local educational change, the staff first identified four critical factors in the failure of changes implemented in schools. Independently, a multi-component closed system model of a school was developed. Then, a general problem-solving model was modified to work within the system model to prevent the critical faults from occurring. The modification resulted in an eleven-step task flow. Finally, packages of inter-personal, analytical and information-gathering skills were developed to aid the change specialist in performing the tasks.

The Design of Programs to Train Personnel to Develop and Conduct Programs of Local Change

ROBERT F. NICELY, JR. and HIAWATHA FOUNTAIN, Learning Research and Development Center

Three training programs in the Pittsburgh-based project to design new approaches to training educational R & D personnel focus on the development and conduct of local change programs. One long-term and two short-term change programs are being developed and implemented. Each of the training programs includes work in four types of training contexts: course work, laboratory exercises or projects, internship experiences, and individualized training program guidance. Generally, course work and labs precede, and provide a foundation for, internship experiences. The long-term program includes some training in the development and diffusion of innovations, educational evaluation, and project management.

Evaluating Programs to Train Educational R & D Personnel

JANE P. WOODWARD and JOHN L. YEAGER, Learning Research and Development Center

Evaluation of goal attainment, training component effectiveness, and transportability of programs to train local change specialists necessitates: 1) resolving conflict between training and developmental goals, i.e., balancing needs to modify components during implementation to meet minimal student training needs and to test training components as originally designed, 2) integrating the evaluator's roles of observer/interventionist and researcher/observer, and 3) developing procedures providing feedback for both immediate modification and later revision and evaluation. Effective procedures for immediate and long-range revision have been developed. Future development, testing, and refinement are anticipated.

SCHOOL BASED EVALUATION STUDIES

Installing an Evaluation System in an Educational Setting: Barriers and Caveats

JERRY P. WALKER, Ohio State University

This paper establishes and explains a series of propositions related to the installation of an evaluation system in an educational setting. The propositions are drawn from the problems identified by the Phi Delta Kappa National Study Committee on Evaluation. The paper treats five key problems and selected strategies for their recognition and avoidance. The problems are those of defining evaluation, identifying decision-makers, eliciting the values and criteria on which decisions are based, serving multiple decision levels, and distinguishing between research and evaluation.

Public School Research – The Two-Faced Profession

MELODIE L. WOMBLE, Dallas Independent School District

Public school researchers are faced with a new challenge—communicating to people other than trained researchers. This paper reviews some results of four communication studies which evaluated the effectiveness of various communication techniques and ascertained attitudes toward them. Feedback surveys, attitudinal questionnaires, and community interviews were administered to determine attitude changes and actual practice. Results indicated that informal face-to-face communication was preferred overall and the use of media aids were preferred in formal presentations. A 12-point communications program was suggested which included the development of a slide-tape presentation, brochures, and glossaries.

An Exploratory Study of the Effects of Compensatory Education on the Reading and Mathematics Achievement of Intermediate Grade Pupils

CALVIN M. SMITH, JR., Columbus Public Schools

The study explores the effects of five compensatory education programs on the reading and mathematics achievement of 2,697 intermediate grade pupils. Pupils were Title I (ESEA) eligible but not all were Title I participating. Coleman effect parameter analysis as extended by Merriman served as the analytic technique. The significance of this study is directed toward the efforts of local school districts to exert more influence over decisions made about Title I products than now permitted. This study demonstrates that money spent on evaluation at the local level can provide both data and information relevant to more than one level of decision-making.

An Evaluation of a Performance Contract

MYRON H. DEMBO and DONALD E. WILSON, University of Southern California

This paper reports an evaluation of a performance contract in reading with 2,500 seventh-grade students. Seventy-five percent of the students were to increase their reading speed five times over their beginning level with ten percent more comprehension after three months of instruction. Results indicated that only thirteen percent of the students reached this objective. Analysis of the program found many invalid evaluation techniques used in the program. Issues discussed are the appropriateness and selection process of the program, negative teacher attitudes toward the program, and the program's failure to provide for the individualization of instruction. Recommendations are provided to assist school districts in developing performance contracts.

A Paradigm for the Evaluation of School Staffing Models: An Empirical Study

BEULAH K. CYPRESS and MICHAEL L. DeBLOOIS, Florida State University

Since the staffing model simulates the implementation of a proposed experimental project, it is important to provide management with feedback regarding the comprehensiveness, feasibility and organizational characteristics of the project model. Instruments were designed for formative evaluation. Five differentiated staffing project models were analyzed and described according to the Profile of School Organizational Characteristics. Dimensions of school operation were based on a conceptual framework; four organizational types were hypothesized in a Likert-type instrument. Resultant profiles demonstrated the strengths and weaknesses of the models and provided information for revision prior to implementation, anticipating a savings in time, energy, and funds.

SUCCESS DETERMINANTS IN EDUCATIONAL PROGRAMS AND PROJECTS

Successful Compensatory Education Programs for Disadvantaged Children

MICHAEL J. WARGO, P. L. CAMPEAU, and G. K. TALLMADGE, American Institutes for Research

Ten compensatory education programs for disadvantaged children which clearly demonstrated statistically and educationally significant cognitive benefits were identified on the basis of review of well over 1,200 candidate program evaluations conducted since January 1968. The current status of 31 programs identified as successful during two previous studies in this series was also summarized. On the basis of often inadequate new evaluation data, only 9 of the 31 programs were determined to be continued successes. It was concluded that the effectiveness of compensatory education could not be fairly assessed until substantial improvements are made in program evaluation.

The Relationship between Innovativeness and Selected Elements of Group Structure

DAVID P. CRANDALL, University of Massachusetts

Staff members (N = 130) of six elementary schools provided information about the communication network and informal organization of their school as well as personal data. This data was related to four measures of innovativeness based on the within-group diffusion of team teaching. Findings for specific hypotheses were mixed. However, unanticipated findings indicate the vital role of the elementary principal as an agent of change. Independent research found that the most innovative school also possessed an "ideal" learning environment as perceived by its students. As such, the techniques utilized offer a practical vehicle for improving communication and initiating meaningful change within schools.

An Instrument for Measuring Staff Sentiments Toward Self, School, and Profession

N. CECIL CLARK, Florida State University

In accordance with a conceptual model for school personnel utilization, a five subscale instrument was developed for measuring staff sentiments. *Self-Concept* concerns self-perceptions about one's creativeness, motivation, uniqueness, etc. *Frequency of Interaction* measures the exchange of ideas with persons in different staff positions. *Collegiality* concerns interpersonal relations within the school and between staff and administration. *Professional Practices* assesses agreement of actual school practices with professional and ethical standards. *Preferred Professional Practices* compares the individual's preferences with published standards. Reliability data are encouraging and validity information is expected to accrue with continuing application.

The Impact of Instructional Television Aids on Teacher Behavior and Student Learning

DAVID A. PAYNE, University of Georgia; JERRY B. AYERS, Tennessee Technological University; PETER J. ROWE, Stephens College

Two experiments were undertaken to investigate the impact of two types of elementary school instructional television aids: television manuals and televised teacher communiques. Teachers and students were tested with instruments built from the objectives suggested in the teacher aids as well as those implicit in the telelessons. Conclusions: (1) significant student learning results from instructional television, (2) increased student learning is a function of the nature of teacher self-preparatory activity, and (3) teachers do not engage in a high frequency of pre or post telelesson activity.

VALUE AND OPINION ORIENTED EVALUATION SYSTEMS

Achievement Expectations: A Survey of Professional Opinions

PAUL A. BRADLEY, University of California, Los Angeles

A decision model for selecting the most critical goal area for an elementary school has as one of its components the improvement in student performance that can be expected when a new instructional program is implemented in the school. A questionnaire was designed to obtain the opinions of educators regarding the expected improvement in student performance for 40 goal areas and 6 different student populations. The results indicated there were statistically significant differences between goal areas, but not between student populations. However, the differences were small in magnitude and accounted for a small proportion of variance.

Differential Valuations of Elementary Educational Goals

WILLIAM J. DOHERTY, University of California, Los Angeles

Based upon a comprehensive approach to educational goal selection, a national sampling of elementary school principals, teachers, and parents was compared over various demographic variables in terms of their goal priorities. The demographic data were: school-pupil population, size of school community, racial-ethnic composition of student body, socio-economic composition of school neighborhood, and geographic region of school. These characteristics were analyzed with the priority ratings to determine characteristics giving rise to priority differences. Such information is important for understanding the communication problems among the various constituencies with a school and the reasons for characteristic group pressures.

Empirical Utility Functions for Test Performance

JAMES S. DYER and WILLIAM FARRELL, University of California, Los Angeles

This paper discusses a method for the estimation of an elementary school principal's utility (or preference) function for the performance of his students on a nationally standardized examination in a particular curriculum goal area. The instrument used in this study was a mailed questionnaire administered to a national sample of elementary school principals. The information regarding the utility functions may be used to rationalize the selection of particular curriculum goal areas (e.g., word comprehension) for relative emphasis. Finally, the results of the actual use of this procedure are reported.

National Elementary Education Priorities

RALPH HOEPFNER, University of California, Los Angeles

A collective-viewpoints procedure was utilized which allows various constituent groups to select from a comprehensive vocabulary of educational goals those of greatest importance. The priority ratings were summed over three groups (192 elementary principals, 1,184 teachers, and 1,179 parents) to obtain a ranking of national education priorities. Mean priorities within the areas of affective, cognitive, psycho-motor and subject-matter goals for each of the groups are compared. Within the subject-matter domain, comparisons are made among focal curriculum areas. The data provide valuable information for test and curriculum publishers in the form of market research data.

SYMPOSIA

THE APPLICATION OF MEASUREMENT THEORY AND INSTRUCTIONAL PSYCHOLOGY TO NON-RESIDENTIAL HIGHER EDUCATION

JOHN W. HARRIS, University of Georgia, ORGANIZER

To examine current theory and practice in measurement for their relevance to examining procedures in non-residential degree programs and to suggest ways to apply current theory and practice in instructional design to the development of instructional programs for non-residential students, taking into account the particular assets and liabilities of independent, off-campus study are the bases upon which this symposium was developed.

"Bases for Certifying Student Attainment" will be presented by Frederick B. Davis of the University of Pennsylvania. The development and use of valid certifying examinations is fundamental to the successful operation of non-residential degree programs at the college level. Without such examinations, it is impossible to engender confidence and respect for these programs among academic personnel or laymen.

The basis for establishing the content validity of certifying examinations is the development of defensible objectives of instruction and of accompanying learning exercises and readings. The process of knitting examination tasks to these objectives and materials with the aid of expert consultants and statistical data will be discussed. Special consideration will be given to a method for assuring that the contributions of subtopics to the variance of total examination scores are appropriate. The techniques of test construction that maximize the validity and the accuracy of measurement of "criterion-referenced" tests will be discussed, and the estimation of these characteristics for certifying examinations will be illustrated.

"The Implications of a New Technique for Measuring the Understanding Gained from Reading for Non-Residential Programs" will be discussed by Ronald P. Carver of the American Institutes for Research. Most of the learning which takes place during a student's tenure at a university involves the reading of written discourse. A method of evaluating such learning would decrease the need for tenure requirements and course grades for certification. For example, if an individual could be given credit for reading, understanding, and storing the information contained in a certain psychology textbook, there would be less need for presence in a classroom. Such granting of credit should be subject to less error than is the case with correspondence courses. Recent experimental results, unpublished, indicate that understanding during reading and information stored during reading are perfectly related. Furthermore, a method of measuring information stored for any written material has been developed. Using a computer, a standardized measure of information stored from any written material can be developed in a matter of seconds. It appears to be methodologically feasible to measure the essence of the understanding gained through reading and which leads to the possibility of evaluating accurately the amount learned (knowledge gained or information stored) by non-resident students.

"Systematic Development of Instruction for Non-Residential Study" will be presented by Stephen L. Yelon of Michigan State University. An approach to instructional development for non-residential study will be described. It will include the process of stating educational goals and program development and evaluation. In this paper, programs for non-residential study will not be constrained to include only *self*-study. In the approach to be described, programs will be derived according to the needs of the students and the constraints of the instructional system.

Operations and decisions for an instructional designer will be suggested. Furthermore, examples will be offered and criticized based on the decisions accompanying each of the steps in the suggested sequence for designing an instructional program.

"The Representation of Knowledge in Written Instruction for Non-Residential Students" will be discussed by Robert D. Tennyson of Florida State University. The university without walls concept removes the student from the context of the classroom and its traditional form of transmitting knowledge. The assumptions of what to teach are now significantly altered because the historical interaction of student-teacher is replaced with a student-environment interaction. Instruction is the transmission of the current representation of knowledge. This representation is in the form of scholarly jargon and is integral to traditional collegiate instructional systems. On the other hand, instruction designed for the non-residential student might rely on a new base of knowledge representation outside the confines of the jargon. This presentation will be concerned with the principles connected with representative information processing. The orientation involves reforming knowledge representation in complex cognitive instruction (e.g., Gagne's hierarchy). Currently, this development's primary use is with computer-assisted instructional systems and studies of artificial intelligence; nevertheless, it can be generalized to all modes of instruction.

These papers will be discussed by Arthur W. Chickering of Empire State College, State University of New York; Ernst Z. Rothkopf, Bell Telephone Laboratories; and Charles A. Wedemyer, University of Wisconsin.

EVALUATOR CERTIFICATION: INFLICTION OR REMEDY

ROBERT R. LANGE, Ohio State University, ORGANIZER

The rapid increase in the demand for evaluation services in educational agencies raises questions regarding the determination and explication of evaluation performance standards and methods of improving the level of quality control for such services. Because educators have traditionally used certification as a means for establishing and maintaining professional performance standards the initial movement with regard to evaluators likewise points toward certification. In view of this trend, the time is propitious for free and open professional discussions of the issues surrounding certification. The purpose of the Symposium "Evaluator Certification: Infliction or Remedy" would provide a forum for such discussion.

FUNDING AND CONTRACTUAL ISSUES IN SCHOOL SYSTEM EVALUATION

LARRY W. BARBER, Louisville Public Schools, ORGANIZER

The purpose of this symposium is to explore a serious concern expressed by many evaluators employed by large city school systems as directors of their research/evaluation programs. The concern is clearly and simply one of optimal use of federal funds for evaluation of federally funded educational programs in public school systems. Currently, many federal educational or training programs specifically forbid or strongly discourage the use of program money to evaluate the effects of that program by the funded agency. Yet the funding agency will contract with an outside evaluator to provide them with an evaluation concerning the effects of the program.

A MODEL FOR ESTIMATING THE RELIABILITY AND VALIDITY OF CRITERION REFERENCED MEASURES

THOMAS OAKLAND, University of Texas, ORGANIZER

The general purpose of the symposium is to propose an evaluation model which the Southwest Educational Development Laboratory has developed for estimating the reliability, validity and general psychometric properties of criterion referenced measures (CRM). Within this framework, the following objectives are specified for the symposium: to discuss the role of CRM within the evaluation process; to outline unique features of CRM as they impinge on validation methods; to describe and evaluate existing procedures for evaluating CRM; to describe a model for estimating the reliability and validity of CRM which is applicable to a variety of instructional systems; to discuss the implications of this model in terms of program evaluation; and to elicit a discussion and critique of the proposed model.

The first paper will be "The Role of Criterion Referenced Measures within the Total Evaluative Process" by Beth T. Kennedy, Southwest Educational Development Laboratory. The increased precision and sophistication underlying instructional programs recently developed has produced corollary changes in educational evaluation. The more traditional evaluation strategies concerned with assessing prevailing differences in achievement among groups having competing instructional programs and products are not being discarded; the educational profession continues to be concerned with this question. However, attention is becoming increasingly focused on demonstrating the efficacy of instructional programs in terms of their being able to produce measurable changes in specified behaviors. The profession is interested not only in the extent to which instructional programs produce general changes in behavior (i.e., those which may be measured by standardized achievement and aptitude tests), but also the extent to which programs produce changes in specific behavior (i.e., specific criterion behaviors which pertain to a particular program). This presentation discusses the role of CRM as they are employed to provide learner performance data. In addition to charting growth curves for individual pupils, data from criterion referenced measures are important in evaluating and revising program content, in evaluating the efficacy of instructional sequences, and in evaluating competing instructional programs and products.

The second paper is "Contrasting Norm Referenced and Criterion Referenced Measures" by Robert S. Randall, Southwest Educational Development Laboratory. While traditional methods for designing and evaluating normed referenced measures (NRM) are readily available, the utilization of these methods for designing and evaluating CRM has been questioned. Traditional statistical methods used in test validation, particularly those that examine interpersonal variance through correlational techniques, may not apply to measures in which interpersonal variance is not an essential characteristic. Assumptions that govern the design of NRM and CRM are examined and their implications for validation techniques are traced. The conclusion is that the use of traditional statistical methods which rely upon homogeneity of items and variance of scores (e.g., item analysis and rank and product-moment correlations) is limited for criterion referenced measures. An effort then is made to demonstrate the need for developing new techniques for validating CRM.

The third paper is "An Evaluation of Available Models for Estimating the Reliability and Validity of Criterion Referenced Measures" by Thomas Oakland, University of Texas. Various theoretical models and statistical methods have been proposed as viable alternatives to those currently used with NRM. These new strategies have examined one or more of the following issues: the use of NRM as CRM and estimating the reliability of such measures in terms of variance from an arbitrarily specified criterion; estimating the reliability of single item tests; the modified use of item analysis as a means of judging the efficacy of instruction. This presentation will review existing methods and models in an attempt to evaluate their efficacy in test validation procedures.

The fourth paper is "A Review of Attempts to Arrive at More Suitable Evaluation Models: An Introspective Look" by Leon Edmonston, Southwest Educational Development Laboratory. During the last three years, the Southwest Educational Development Laboratory has reviewed the appropriateness of existing evaluation models and statistical methods for the evaluation of CRM. It also has developed alternatives to these in an effort to find procedures which consider not only the unique psychometric characteristics of CRM but which also are suitable for use in an applied educational setting. This presentation reviews the efforts to arrive at SEDL's current evaluation model by examining those models employed over the three year period; it is hoped that other institutions will benefit from a discussion of the problems encountered by the Laboratory during this period.

The final paper is "A Model for Estimating the Reliability and Validity of Criterion Referenced Measures" by Leon Edmonston and Robert S. Randall, Southwest Educational Development Laboratory, and Thomas Oakland, University of Texas. The evaluation model provides procedures for estimating the reliability and validity of CRM. Emphasis is placed upon the statistical methods used in estimating psychometric properties of test items as well as the decision rules employed for determining item or curriculum revision.

Reliability methods principally emphasize consistency of test-retest performance based upon the pass-fail pattern for each item. Approaches to construct and predictive validity of individual items also are examined. Validity estimates entail a three-stage process which utilizes a variety of cross validation procedures. The first stage involves an examination of response consistency on different items from the same or similar content domains. The second stage involves an examination of response consistency on similar items from CRM and NRM. The third stage involves an examination of the relationships between performance on CRM and independent ratings from observers who are familiar with the children (e.g., teachers).

The description of existing and new techniques for examining and describing the psychometric properties of CRM should be of use to others who design and/or employ CRM within educational or program evaluations. The emphasis throughout the symposium is on utilizing particular theoretical models and statistical methods which have demonstrated usefulness within applied educational settings.

James W. Popham of the University of California, Los Angeles will discuss the papers.

A NEW KIT OF TOOLS FOR DESIGNING INSTRUCTION

POLLY B. CARPENTER, Rand Corporation, ORGANIZER

The purpose of this research is to provide tools to facilitate the design of programs of instruction that are feasible within the operational resources and requirements in a real school. These tools comprise a set of components that will work together to produce descriptions of programs of instruction—time-phased configurations of learners, teachers, materials, equipment, and facilities that are appropriate for teaching a given course of study—along with costs and outputs of graduates.

THE PRACTICE OF EDUCATIONAL PROGRAM AUDITING

DAVID F. ENGELHARDT, Engelhardt and Engelhardt, Inc., ORGANIZER

Educational program auditing is a specific task required in some federally funded projects. Some states will also be implementing a program audit system. Sometimes compared to the certified public accountant, the educational auditor serves a specialized role in the general movement of accountability. In performance contracting the auditor will also certify results on which the contractor's fees are based.

"Purposes, Conceptual Issues, and Operational Problems in Educational Program Auditing" will be presented by W. Stanley Kruger, U. S. Office of Education. The educational program auditor establishes and operates a performance control system based on external reviews conducted by qualified outside technical assistance, designed to verify the results of the evaluation of an educational program and to assess the appropriateness of evaluation procedures for determining the effectiveness of project operation and management. The auditing team should possess skills in the fields of "educational measurement and evaluation" and in "management operations analysis."

The issues raised by the performance of broad audit tasks will be outlined. Remarks will be made on the state-of-the-art as seen by personnel at USOE.

"Experience in Educational Auditing—An Educator's Perspective" will be presented by Robert W. Consalvo, Heuristics, Inc., Dedham, Massachusetts. The purpose of this presentation is to describe some of the actual experiences encountered by an auditor during the audit process, and the reactions of LEA and project personnel to the audit. The presentation focuses on the methods of the audit as viewed by an educational researcher. The discussion also attempts to point out some alternatives to the audit process and problem areas in which researchers may begin to raise questions and provide feedback about the audit concept.

"A Management Perspective of Educational Program Auditing" will then be presented by King Bennett Nelson, Institute for Development of Educational Auditing, Arlington, Virginia. Educational Program Auditing is viewed as an expanding dimension of the current accountability movement, with the focus on its impact on educational management. Experiences drawn from over a dozen current Institute audits as well as from projects on which the Institute, itself, is being audited, provide evidence of both benefits and shortcomings in the state-of-the-art. Although most educational program auditing activities now are related directly to Federally-funded projects at the local level, work on two state level developmental programs indicates a new trend in the implementation of the concept. The need for "generally accepted educational evaluation and management practices" then is presented as a key factor in the future of educational program auditing.

The final paper, "Parallel Issues in the Auditing Field–Within and Outside Education" will be presented by John G. D. Carden, Ernst and Ernst, Cleveland, Ohio. Educational program evaluations and independent audits of those evaluations are being used increasingly, especially in connection with U. S. Office of Education grant programs, to assure a higher degree of educational program accountability. This is a relatively new activity in the educational field with a number of conceptual and procedural problems.

The purpose of this presentation is to highlight some of these problems and offer possible solutions from the perspective of operational and fiscal auditing with other governmental agencies. Special attention will be given to: the scope of the educational program auditor's professional responsibilities including the implications of the auditor's opinion; problems of auditing procedures and evidential material necessary for the auditor to satisfy himself about the reasonableness of the evaluation results.

Orlando F. Furno, Baltimore Public Schools and Thomas E. Hutchinson, University of Massachusetts will discuss the papers.

SOME REAL ALTERNATIVE APPROACHES IN EDUCATION

SANFORD TEMKIN, Research for Better Schools, ORGANIZER

There has been an outright shift of priorities in the direction of seeking effective and efficient alternative ways to meet educational needs in the United States. One compelling reason for this impetus toward structuring and exploring alternatives has been the perception that existing educational practices and processes are unable to produce desired social and educational outcomes.

This symposium explores a series of promising and imaginative alternative approaches in education. While these approaches are not sufficiently advanced in their development to be evaluated by on a "hard data" basis, they nevertheless warrant substantial *a priori* attention. The objectives of this symposium are to present information about these emerging programs and to have responsible school administrators discuss their implications for school districts specifically and education more generally.

SYSTEMIC CHANGE: THE CASE OF THE HARRISBURG CITY SCHOOL DISTRICT

FREDRICK TANGER, Research for Better Schools, Inc., ORGANIZER

The objectives of this symposium are to: (1) describe the experiences of the Harrisburg City School District in planning and implementing administrative reorganization and desegregation as an example of an attempt at systemic change; (2) analyze the processes and key roles involved in the effort; and (3) relate the effort to an approach to organizing, planning and managing for change in a school district.

TRANSACTIONAL EVALUATION – A THIRD WORLD?

ROBERT M. RIPPEY, University of Illinois, Chicago Circle, ORGANIZER

Evaluation may play a crucial role in alleviating resistance to change which is caused by role threats. Perhaps innovation in education is doomed to its traditional record of mediocrity unless a closer link can be forged between curriculum change and evaluation. This link must look beyond both the formative and summative aspects of evaluation. Thus the term "transactional evaluation" is used to refer to evaluation which looks not only at outcomes, but also at the process of interaction among students, parents, teachers and administrators: evaluation which probes not only the optimistic expectations, but the apprehensions of both the protagonists and the antagonists to change. An evaluation which confronts threatened role incumbents with immediate feedback about conflict.

SPECIAL INTEREST GROUPS

PAPER SESSIONS

BLACK PERSPECTIVE AND RACIAL ATTITUDES OF BLACK PRESCHOOL CHILDREN (SIG/RESEARCH FOCUS ON BLACK EDUCATION)

A Developmental Study on Race and Sex Role Awareness Among Black Preschool Children

ALVIS ADAIR, Howard University

Seven variables (race identity, sex identity, racial labeling racial attitudes, racial preference, relative importance of sex and race, sex role awareness) were investigated for developmental trends among seventy-two Black children, three to five, from low-income families. Four out of eight photographs were ranked on each of twenty questions. Race identity did not increase with age. Ability to apply racial labels increased with age among the boys. Attitudes and preferences were slightly more favorable for White than for Black. Sex identity increased with age. Sex was more dominant than race for the girls. Race was more dominant for boys.

Black Perspective in Child Development

BASIL MATTHEWS, Howard University

This paper aims at identifying, describing, defining and illustrating the concent of the Black Perspective. It does this from a sociological and anthropological framework, the scrutiny of Black literature and participant observation of Black life in Africa, the Caribbean and the United States. The supersystem of Black Culture is postulated; its central theme of African hominology is analyzed. The Black Perspective emerges as a dynamic in every articulation of Black life styles. The Black Perspective appears to be particularly relevant to the development of research approaches in the development of self and racial awareness in young black children.

Racial Attitudes and Self Concepts in Mississippi and Michigan Black Preschool Children

HARRIETTE McADOO, Howard University

An exploratory study of the relationship between racial attitudes, self concepts, and IQ of Black preschool children in Mississippi and Michigan. The Mississippi sample was from an all Black rural Delta town, while the Michigan sample was from an integrated urban center. Both groups had similar racial attitudes, more positive than obtained earlier from white samples. Mississippi children received significantly higher self concept scores, while the Michigan group had significantly higher IQ scores. IQ and SC were negatively related for the Michigan girls. RA and SC were negatively related for the Mississippi boys and children from intact homes.

An Experimental Study of Racial Attitude Change in Black Preschool Children

JOHN McADOO, Howard University

This study explored the effects of positive reinforcement, negative reinforcement, and a Black Consciousness curriculum on the racial attitudes of Black Preschool Children in three integrated, urban preschool centers. The positive and negative reinforcement groups were randomly selected from two of the centers, while the Black Consciousness group was randomly selected from children in the third center. The groups were given a pretest, six weeks of treatment, and a post-test. Results indicated that negative reinforcement had a significantly greater effect upon racial attitude change than either the use of positive reinforcement or the Black Consciousness curriculum.

BLACK STUDIES CURRICULUM DEVELOPMENT AND EVALUATION (SIG/RESEARCH FOCUS ON BLACK EDUCATION)

The Development of a Black Curriculum for Young Children

BERNARD SPODEK, University of Illinois; DORIS WHITE, Purdue University; PEARL ANDREWS, Southern University; JOYCE RILEY, Vassar College; and MARJORIE LEE, University of Illinois

A kindergarten-primary curriculum was developed to help children become aware of significant aspects of black culture and to learn to confront the problems of living in an integrated society. The units developed were field testing in a white, middle class suburb, a Southern black urban school, and a racially mixed midwest school. The results of the field testing showed that young children could increase their knowledge about Black Americans. In addition the program seemed to improve the racial attitudes of the white children involved and the self-concept and school readiness of the Black children involved.

Integration and Approaches to Black Studies in Elementary and Secondary Schools

LaMAR P. MILLER, New York University

A short answer questionnaire including a special check list categorizing blacks and ethnic studies programs as either weak or strong was administered to a random sample of 278 elementary and secondary schools in New York State. The questionnaire also included the percentage of non-white students attending the schools. The results indicate that integrated schools are more likely to have strong black studies programs and that schools that are not integrated are likely to have either weak programs or no focus at all on black or other ethnic minority groups. The extent of integration is the key factor in the decision to implement black or ethnic studies programs.

CLASSROOM QUESTIONS AND THEIR EFFECTS UPON COGNITIVE ACHIEVEMENT (SIG/RESEARCH IN SOCIAL STUDIES EDUCATION)

The Relationship of Classroom Questions and Social Studies Achievement of Second-Grade Children

L. JoANNE BUGGEY, Twin Cities Social Studies Service Center, Minneapolis

This study investigated the relationship between the use of knowledge-level and higher-level questions, sex, school location, and the social studies achievement of second-graders. Two experimental groups and a control group (108 subjects) were used in a post-test only control group procedure using a 3 x 2 x 2 factorial design. The experimental groups were instructed for six weeks using visual materials prepared for the experiment. The findings of the study indicate that achievement is significantly and positively affected by the use of predominantly higher-level questions and suburban school location, and is not affected by the sex of the children.

The Relationship of Two Methods of Question Presentation, Sex, and School Location to the Social Studies Achievement of Second-Grade Children

JUNE F. TYLER, Twin Cities Social Studies Service Center, Minneapolis

This study investigated the relationship between two methods of instruction based on questioning procedures, sex, school location, and the social studies achievement of second-graders. Two experimental groups and a control group (120 subjects) were used in a post-test only control group procedure using a 3 x 2 x 2 factorial design. The experimental groups were instructed for six weeks. The major findings indicate that achievement is significantly and positively affected by predominantly higher-level questions and the use of non-reading materials, and suburban school location, and is not affected by the sex of the children.

The Relationship of Classroom Questions and Social Studies Achievement of Fifth-Grade Students

TOM V. SAVAGE, Western Washington State College

This study was one of three related studies which examined the relationship of teacher questions and pupil achievement. Eighty fifth-grade pupils from urban and suburban schools were randomly assigned to three groups. One group received instruction consisting of predominantly low-level questions, a second group predominantly high-level questions, and a third group served as a control group. A 3 x 2 x 2 factorial design was used. A significant difference was found between the control group and the two treatment groups. Girls scored significantly higher than boys. No difference was found, however, between the two treatment groups, nor between urban or suburban school locations.

The Effect of Questioning Level on Cognitive Achievement Using an Auto-tutorial Approach

JULIA QUIRING, Pennsylvania State University

This investigation studied the effects of question level on cognitive achievement. An auto-tutorial learning package with either high or low level questions was designed for teaching the concept of medical and surgical asepsis. Seventy-two sophomore baccalaureate nursing students were randomly assigned to two experimental groups (high or low question levels) and a control group. There were no significant differences in achievement scores evidenced for students in the three groups. This study indicates that for the adult learner the level of question posed in a learning package does not significantly influence achievement on a dependent measure composed of high level questions.

CURRENT RESEARCH IN SOCIAL STUDIES EDUCATION (SIG/RESEARCH IN SOCIAL STUDIES EDUCATION

Ethnocentrism and Cultural Relativism in Children's Thinking about Foreign Values and Attitudes

GARY R. McKENZIE, University of Texas, Austin

Ss (N = 133) were selected randomly from one elementary school. *Ss* were shown photographs of Bushmen performing daily activities and asked to predict whether a Bushman would prefer specific indigenous customs or their American equivalents, and then to justify the prediction. Scores for three types of predictions and five types of justifications were compared across six age groups. All *Ss* tend to predict Bushmen prefer their way to ours; 11 year olds do so more than 6 year olds. Older *Ss* use cultural relativism more than primary grade *Ss*, who use ethnocentric reasoning more than older *Ss*.

What Are They Telling us About Social Studies? A Survey of the Interests and Opinions of Upper Elementary School Children in Ohio and West Virginia

ALBERT G. LEEP and HENRY D. OLSEN, Ohio University

The "Children's Insights and Opinions Inventory" was administered to 410 fourth, fifth and sixth grade students in four school districts. Results indicate that social studies is perceived in an unfavorable light because of excessive use of "textual reading and answering questions" and too little emphasis on participatory activities. Children pointed out that they would like to study such topics as: What people in other countries believe and what their customs are and how people decide what kind of work they will do and how they will spend the money they make.

Teacher-Pupil Interaction and Teacher Expectations for Pupil Achievement in Secondary Social Studies

CATHERINE CORNBLETH, Pittsburgh, Pennsylvania

The equivocal findings regarding the hypothesized self-fulfilling nature of teacher expectations for pupil performance have stimulated investigation of teachers' classroom behavior. In contrast to previous studies which created teacher expectations for elementary pupils' performance, this study examined whether teachers' expressed expectations for pupil achievement would differentially affect teacher behavior with secondary pupils in social studies classes. Observations of teacher-pupil interaction in seven classrooms were made during a twelve-week period. While differences in the frequency and nature of specific teacher-pupil interactions were found, evidence of systematic differences in teacher behavior with high and low ranked pupils was minimal.

Improving Classroom Questioning Practices of Prospective Elementary School Social Studies Teachers

HENRY D. OLSEN, Ohio University

Experimental materials, designed to increase the proficiency of instructional questioning, were utilized by ten juniors enrolled in a social studies methods course at Ohio University during the Spring, 1971 term. These ten students, and a control group of twenty, also juniors enrolled in the same social studies methods course, were observed during a thirty minute social studies lesson to second and third graders. Results indicate that, although not significant, the experimental group asked fewer memory and interpretation questions, more analysis and application questions, but the same amount of synthesis and evaluation questions as the control group.

EFFECTS OF PROGRAMMED VS. CONVENTIONAL INSTRUCTION ON PROFICIENCY AT OFFICE-TYPING TASKS (SIG/RESEARCH IN MATHEMATICS EDUCATION)

LEONARD J. WEST, City University of New York

Conventional instruction in vocational typing skills (much attention to simple copying skills, late introduction of vocational typing tasks, much teacher and textbook guidance in making placement decisions) was contrasted with the reverse tactics, using programmed instruction to teach the placement processes applicable to vocational typing tasks (business letters, tables, manuscripts). Among 547 low-ability students in 28 first- and second-year typing classes of 6 teachers in 2 vocational high schools, the latter instructional tactics were found to be significantly superior to conventional ones. Indeed, proficiency among first-year programmed students exceeded that of second-year conventional students.

EMPIRICAL STUDIES IN STRUCTURAL LEARNING (SIG/STRUCTURAL LEARNING AND DIVISION C)

Information Processing Capacity of Humans

JOSEPH M. SCANDURA and DONALD VOOHRIES, University of Pennsylvania

According to Miller, human *S*s have a finite capacity (7 ± 2 chunks) for processing information. Available data, however, have been restricted largely to simple tasks (e.g., digit lists) and reflect group averages. It was not clear whether each individual has a certain capacity and whether or not this capacity is constant over all tasks. An analytic method is proposed for calculating the memory load for processing information via arbitrary rules. The data obtained based on this analytic method strongly suggest that each individual *S* has a fixed capacity for processing information and that this capacity is constant over all tasks (i.e., for all rules).

Problem Solving under the Memory Free Paradigm

JOSEPH M. SCANDURA, JOHN DURNIN, FRANCINE ENDICOTT and LEWIS ACKLER, University of Pennsylvania

Given the constituent rules for solving a problem, some *S*s succeed on the problem whereas others fail. The purpose of these studies was to test the basic hypothesis that the latter *S*s lack a higher order rule which is available to the former. Three experiments were conducted. Each involved basically different kinds of higher order rule. Under the idealized (memory-free) conditions considered, *S*s were able to solve new problems with new component rules if and only if they were trained on the higher order rules. This effect was deterministic rather than probabilistic and held for essentially every *S* on each transfer problem used.

An Algorithmic Approach to Assessing Behavior Potential: Comparison with Item Forms and Hierarchical Analysis

JOHN H. DURNIN and JOSEPH M. SCANDURA, University of Pennsylvania

The purpose of the study was to compare an algorithm-based technology with two existing technologies for assessing behavior potential. The bases of comparison were: (1) relative effectiveness of the technologies to predict performance on individual second test items based on first test performance, (2) relative power, in the sense of providing a basis for overall generalization from test performance to performance on a well defined domain of problems, (3) relative efficiency as determined by the number of test items required, and (4) relative validity of the test item hierarchies associated with the respective technologies. Results favored the algorithmic technology.

EVALUATING SIMULATION SYSTEMS (SIG/SIMULATION SYSTEMS)

Simulation as a Device for Facilitating Faculty Participation in College Government

CAROLINE J. GILLIN, U. S. Office of Education

This study attempted to determine the effectiveness of using simulation in making a faculty more sensitive to their role in college planning and decision-making, and in changing a pattern of college government. During the first simulation session, faculty teams developed proposals to be used to facilitate faculty participation in college government. In a second session, a final proposal was refined and submitted to a more conventional committee which adapted it to the needs of an actual college. Changes which came about included a decision-making body with equal faculty and administrator representation, a circular intersecting organizational chart and greater interest in participation by faculty.

The Relationship Between Attitude Change and Number of Plays of a Social Simulation Game

STEVEN J. KIDDER, Johns Hopkins University

The present study was conducted in an attempt to analyze the effect of playing the social simulation game *Ghetto* on attitude change. More specifically, would one, two, or three plays of the game affect attitude change differentially? A one-way design was employed with random assignment to the following groups: (1) control; (2) introduction plus eight rounds of game; (3) introduction plus sixteen rounds of game; (4) introduction plus twenty-four rounds of game. A questionnaire on attitudes toward ghetto people was administered to each group (N = 20 per group) after their respective treatments. The results of this study suggest that two exposures to the game (about 16 rounds) induce significant attitude change.

The Evaluation of Educational Games

CORA T. COLEMAN, Temple University

Methods for evaluating educational games are inadequate. A search of the literature revealed several subjective attempts at evaluation but no objective guidelines. Using my original game, Genetico, questionnaires were devised with references to attitudes toward the game and the educational skills developed through its use. This study is an attempt to formulate some criteria for assessing the value of games in the classroom and surmount the tendency for the indiscriminate use of these teaching devices. Such an undertaking was not entirely successful but with the proliferation of educational games, evaluation standards are essential for their most effective use by teachers.

THE SCOPE OF SIMULATION APPLICATIONS (SIG/SIMULATION SYSTEMS)

Testing Policy with Simulations: A Progress Report

PETER S. MILLER and RICHARD B. ANDERSON, Abt Associates, Inc.

Properly-constructed human player simulations can provide valuable guidance to policy-makers. In this progress report, we discuss recent efforts to bring the power of simulation to bear on hitherto intractable issues of national and local educational policy. We report the early impacts of these simulations efforts, as we understand them, and we draw tentative generalizations about the costs and benefits of the simulation approach as compared with alternatives.

The Use of Branching Type Simulation Exercises in Programs of Physician Self-Assessment

LeROY Wm. NATTRESS, JR., National Resources, Inc.

The Continuing Education Committee in Otolaryngology of the American Academy of Ophthalmology and Otolaryngology approved a Self-Assessment Examination program for Otolaryngologists in September, 1970. Six Branching Type Simulation Exercises were developed for administration at the Annual Meeting of the American Academy of Ophthalmology and Otolaryngology, September 20-23, 1971 in Las Vegas, Nevada. This paper will discuss the development of these problems, the experiences in administering them to otolaryngologists and the feedback mechanisms whereby they gained insight into their ability to treat complex otolaryngological problems. Examples of the six problems used and the feedback given will be available for review by those attending this presentation.

Classification and Taxonomy of Simulation: A Preliminary Analysis and Synthesis

DUANE H. DILLMAN, Temple University

The purpose of this study was to examine the variety of ways simulation has been used, to differentiate among the variety of classifications, and to suggest a beginning taxonomy for the field. Nine classification schemes were analyzed in comparison with recent efforts to consider research and development in the area of simulation. The study suggested limitations for a taxonomy of simulation along with the basis of a taxonomy which utilized the present development of the field and permitted further evolution of taxonomies. The importance of a taxonomy in helping provide the theoretical framework for the field was discussed.

VOCATIONAL – TECHNICAL EDUCATION: PAPER DISCUSSION SESSION – RESEARCH IN VOCATIONAL – TECHNICAL EDUCATION, AND BUSINESS MEETING (SIG/VOCATIONAL – TECHNICAL EDUCATION)

A Rationale for Career Education

JEROME MOSS, JR., BRANDON B. SMITH and GEORGE COPA, University of Minnesota

The purpose of this project was to produce a logical, internally consistent rationale for career education. Initial drafts of the rationale were subjected to critical review by nationally recognized experts in cultural anthropology, sociology, developmental psychology, educational philosophy, labor economics, management, education, and vocational education. The resulting rationale includes: the sociological-psychological framework for career education; ends (enabling and terminal objectives) of career education; guidelines for making value decisions inherent in developing and operating career education programs; and criteria upon which various means for providing career education may be based theoretically.

Problem Areas in Occupational Education for the 1970's

ALLEN B. MOORE and SUE J. KING, North Carolina State University, Raleigh

A total of 1,007 occupational educators in the United States and territories were contacted for comments on the major problems in occupational education. Two hundred responses were analyzed using a modified content analysis approach. This method of analysis yielded several problem areas. The identified problems are related to: financing, planning, and the climate of occupational education; recruitment, placement, and assistance to the clientele of occupational education; program development; the training, performance, and evaluation of teachers and students of occupational education; and manpower information needs. The complete report contains a description of the problem areas and their major components.

The Competency Based Vocational Teacher Education Program at Oregon State University

E. WAYNE COURTNEY and HENRY A. TenPAS, Oregon State University

The objectives included the determination of the common professional education competencies of community college vocational instructors and the cognitive hierarchical levels of these competencies. The study included 160 respondents randomly selected from 40 community colleges in Washington, Oregon, California, and Colorado. It was concluded that (1) community college instructors of vocational subjects resemble one another with regard to the 99 competencies studies; (2) community colleges are very much alike in instructor characteristics; (3) clusters of competencies can be generated for curriculum interests using factor analysis; and (4) several areas of professional development need not extend beyond the knowledge or comprehension domain levels.

Why so Few Black Male High School Graduates Attend Post High School Area Vocational Schools

MAX FARNING, Texas A & M University

The author spent approximately four months conducting interviews with people living and working in black communities in two Northern industrialized cities. Eleven major hypotheses evolved. Statistical and practical differences were found both within and between the black and white races. A new hypothesis emerged: A large proportion of black high school seniors who expect to attend a post high school area vocational school will have these expectations (desires) extinguished during the summer months following high school graduation.

The Role of Simulation in Teaching Complex Problem Solving Skills

CURTIS R. FINCH, Ohio State University; PATRICK A. O'REILLY, Pennsylvania State University

The feasibility of using simulation in teaching students to detect and identify malfunctions in selected electrical and mechanical systems was examined. Two hundred and five enrollees at four area vocational-technical schools participated in the study. After premeasures were administered, students were randomly assigned to treatment and control groups. Those in the treatment group received individual, self-paced instruction on a dynamic simulator; the control group did not receive simulator instruction. With other independent variables held constant, the treatment group performed significantly better on four of the six performance criterion measures.

SYMPOSIA

ADAMS HIGH AND THE ACTIVE LEARNER: THE EVALUATION OF EDUCATION (SIG/RESEARCH UTILIZATION)

CHARLES C. JUNG, Northwest Regional Educational Laboratory, ORGANIZER

Massive new research, development and dissemination efforts have been mounted to improve public education. To be effective and relevant, they need to be referenced to understanding how and why todays youth are different from past generations. They need to be conducted in ways that include new kinds of collaboration. Analysis at Adams High School and the Northwest Regional Educational Laboratory in Portland, Oregon suggest new research needed on the nature of learners, and new ways that evaluation needs to be conducted in our schools. These ideas from the perspective of developers and practitioners are presented as feedback to educational researchers.

"The Next Revolution: Education and the Evolution of Self" will be presented by Charles Jung, Northwest Regional Educational Laboratory, Organizer. An operationally defined model of human evolution of the learner and a dynamic analysis of current needs and changes in society have been stated. These were necessary in order to evaluate the effect of educational improvement efforts of Program 100: Developing Instructional Systems to Improve Teacher Competencies, at the Northwest Regional Educational Laboratory. The extent to which a change can be considered an improvement is a function of current needs of society and a model of what the learner can become.

Two approaches were taken in arriving at the proposed model and analysis of society. One was an interpersonal and intrapersonal exploration by a group of seven persons into the meanings they have experienced for the term "active learner." The other was a retrieval and review of research and theory, from many fields, which appeared related to the model and analysis.

The model presents five phases of social-psychological self which an individual might evolve through dependence on his interactions in his particular culture. These include a pre-social-psychological self phase titled the Animal Self, the Stereotypic Self phase, and the Opinionated Self phase, the Existential Self phase, and the Creative Self phase. Major factors that provide for transition from each stage to the next are described. The organizing principles and boundary for each phase of self are defined. Corresponding differences in ones orientation toward experiencing, the nature of learning, and major conditions for learning are described.

Current needs and changes in society are analyzed in relation to the self evolution model. The major implication derived from this analysis is that individuals need to acquire dynamic (how and why) orientations in place of the more usual statis (what and when) orientations of the past. The relativistic awarenesses which culture and technology now provide cause American youth to be fundamentally different from youth of any era in the past. The present is seen as a critical transitional era.

Implications are suggested for the reformation of education. The self evolution model provides guidelines for operating educational systems that are concerned with what individuals are becoming, as well as what they know and can do. The need to gain personally useable understandings of processes is one essential priority. In addition, individuals need to recognize, and become responsible for, the meanings of choice in their behavior. In this manner, both human worth (capability to meet ones own and other's needs) and human dignity (responsibility for the choices in one's own behavior that increase worth) can be provided.

"A Model for Data Based School Improvement" will be presented by Jerry L. Fletcher, Portland, Oregon, Public Schools, Organizer. Adams High School represents a unique institution in American education in that seven members of the administrative staff hold joint appointments with surrounding laboratories, colleges and universities. They are voting members of the college and university faculties, yet their offices and the principal portion of their work is in the Adams facility. The clinical division of the school is responsible for both research and evaluation, and training, and the clinical professors staff the the clinical division.

Not only is this a unique instance of cooperation between a school district and the surrounding institutions charged with improving American education, but the Adams setting is unique in the degree to which it provides outside institutions with a reality setting for testing their ideas, and with an explicit mechanism for being influenced by the ideas and needs of an operating setting.

This has led to a number of insights into the operation of schools and how to improve that operation. This paper will deal with those insights and suggest a model for integrating systematically collected data into the operation of a school which goes considerably beyond the published models of Stufflebeam and Stake, particularly in the delineation of different classes of decisions which need support, and different classes of data and data generation techniques which are appropriate for each class of decisions.

"The Inquiring School: A Model of Knowledge Utilization in a Self-Renewing Learning Environment" will be presented by John Williamson, Oregon College of Education. This paper will argue that if educational research is to become activistic in the sense of dealing directly and meaningfully with the fundamental problems of schooling it must be linked with a basic transformation of the schools themselves; that the schools must be transformed into centers of inquiry and self-renewal. Such a transformation involves far more than merely imposing the practice of educational research onto the schools. It will require that the schools assume a new role in society that is more complex than any they have taken previously. This paper will probe the nature of these fundamental changes in schooling and clarify what it means for a school to inquire.

It will be proposed that conceptually, the processes of knowledge utilization underlying an inquiring school can be analyzed in terms of a hierarchical model of organizational functioning. The model proposes that an inquiring school is one that functions across the following four hierarchical levels.

1. *The level of operations*—At this level the organization carries out the activities for which it is socially responsible. This is the level at which organizational policy is ultimately implemented.
2. *The level of regulation*—This is the first level of inquiry. The principal function at the level of regulation is to monitor the activities of the operations level in reference to the established goals of the organization. At this level, change is identified with mere adjustment of behavior within an established organizational structure.
3. *The level of learning*—At this level of functioning the organization is able to reorganize its structure and to change its goals based upon information both from within and outside the organization.
4. *The level of consciousness*—At this level the organization monitors itself and its mission in relation to the changing needs of society. The level of consciousness requires that the organization be constantly defining and creating its role in society.

This paper will explicate this model of an inquiring school and probe its operational implications for the practice of activistic research in education. It will also report the activities and findings of a cooperative attempt by Teaching Research and the Northwest Regional Educational Laboratory to work with John Adams High School in Portland, Oregon and Crescent Valley High School in Corvallis in their attempts to become centers of educational inquiry.

Daniel L. Stufflebeam, Ohio State University will discuss the papers.

ALTERNATIVES FOR EDUCATION (SIG/RESEARCHERS FOR ACTION)

IRIS S. NAHEMOW, Allegheny East Mental Health and Mental Retardation Center, Inc., ORGANIZER

The three objectives of this symposium are: (1) to better inform AERA members of the characteristics of a number of alternatives to traditional educational practices, (2) to question persons involved in the development of these new programs about the programs' strengths, successes and problems, and (3) to hear discussion and suggestions related to the implementation of these innovations in additional schools. These objectives will especially satisfy members of the Researchers For Action special interest group who can use this information to help improve schools in their own local areas.

There will be five alternative educational practices included in this symposium.

"Individualized Instruction" will be described by M. Kathryn Meese, Research Assistant, Learning Research and Development Center, University of Pittsburgh. The focus of this speaker will be on structured individualized programs such as Individually Prescribed Instruction (IPI) developed at the Learning Research and Development Center. The stage of development of such programs will be discussed, problems and successes described, and a description of IPI given.

"Open Classroom" will be discussed by Sally Newman, University of Pittsburgh. The open classroom, an attempt to involve the learner more directly in decisions regarding his own education, will be presented. In the open classroom the teacher retains responsibility for the students learning and development of basic skills and continued educational development. The student, however, may base this growth on specific content of interest to him. Examples of varieties of open classroom programs will be presented and experiences in settings using this method will be shared.

"Tutorial School" will be described by Ralph Melaragno, Tutorial School Project Director, System Development Corporation, Santa Monica, California. The tutorial school uses students to tutor each other as an integral, essential part of the everyday school operation. The teacher's role shifts from teaching students to teaching and overseeing tutors. The four aspects which characterize the tutoring are (1) careful diagnosis of each students' needs, (2) provision of appropriate instruction, (3) training of tutors, and (4) evaluation of tutoring for both the learner and tutor.

"Games and Simulation" is the topic of Stephen Kedder, Professor, Center for the Social Organization of Schools, Johns Hopkins University. Games and simulation situations give the student an opportunity to explore the consequences of various decisions before or during a period in which they experience these decisions in their own lives. Through this technique, the student has the opportunity to evaluate the results of alternatives in career choice, social problems, and life style. Discussions following the game or simulation session allow sharing and comparing of perception by the participants.

"Free School" will be described by Nicholas Helburn, Director, Eric Clearing House, Boulder, Colorado. The free school places all educational decisions in the hands of the participating students. Usually operated outside established educational systems, the Free School makes the decisions to attend, or study at all, the student's decision. No courses are required and no expectations but those of the student are considered.

Each presenter will speak for ten (10) minutes, informing the audience of the main characteristics of his program and sharing experiences gained during its use. The presentations will stress goals and philosophy for each program, as well as descriptions of one or more programs of this type already in operation. They need not include research data related to the program's development and use.

CHILDREN'S PERCEPTION OF THE PHYSICAL ENVIRONMENT: A STUDY OF THE ORGANIZATION OF COGNITIVE IMAGES (SIG/RESEARCH IN SOCIAL STUDIES EDUCATION)

JAMES E. KRACHT, Concordia Teachers College, ORGANIZER

The symposium was designed to report on recent research which may be of importance to those interested in research in social studies education. The research reported here holds important implications for social studies education at the elementary level, especially in the areas of curriculum and materials development.

"Children's Cognitive Organization of Space" will be presented by Dr. Dennis G. Asmussen, Macalester College. Dr. Asmussen has studied the way in which children cognitively organize the physical space in their neighborhoods. In his study, the variables of age, sex, and place were investigated insofar as they influence the environmental cognition of children. The influence of the independent variables upon the dependent, children's cognitive maps of their neighborhood environments, was measured by comparing children in groups determined by their ages, sex, and places of residence. The independent variables of age, sex, and place of residence were obtained by sampling two grade levels in two very different sectors of the Seattle urbanized area. A third and a sixth grade class from an elementary school in an upper-middle class suburb comprised one major group of subjects while the other group of subjects was drawn from a third and a sixth grade class in Seattle's inner city.

The data obtained from the subjects were in the form of responses to a series of interview questions and maps which the children drew of their neighborhoods. Children's cognitive maps, a model used to exemplify the process of environmental cognition, were anlayzed in three categories of cognitive units. Cognitive maps, for analytic purposes, were assumed to be composed of: elements in the real world perceived by the child, relations between those elements established by the child, and, for any defined space, a total spatial surface cognitively organized by the child.

Armussen posited that the variables of age, sex, and place of residence differentially influence the cognitive structuring of the cognitive space, neighborhood. Chi-square analysis showed significant differences between grade levels of children, boys and girls, and children from different places of residence. In addition to confirming the original research hypothesis, certain inferences regarding children's cognition of the environment were generated. Dr. Asmussen suggests several new hypotheses which may be fruitful for further research.

"Children's Cognitive Images of Urban, Suburban, and Rural Landscapes" will be presented by Dr. James B. Kracht, Concordia Teachers College. Elementary school children's cognitive images of urban, suburban, and rural landscape scenes were investigated in an effort to test the following hypotheses: children's images of landscape types vary, and the image of the landscape type which is most similar to the subject's home area is more highly favorable than the images of landscape types with which the subject has had little or no direct experience. A total of 120 children served as subjects, and were divided equally into urban and suburban residents, third and sixth grade pupils, and males and females.

The independent variables were: place of residence, age, and sex of the subjects; while the dependent variable was the subject's cognitive image of each of the three landscape types. The cognitive image was defined as the combined scores on the following four measures: the subject's attitude toward each of the landscape types as indicated on eight five-step semantic scales, the subject's indication of a particular landscape as the most desirable place to live, the subject's indication of a particular landscape as the least desirable place to live, and the subject's indication of a particular landscape as the most desirable place for recreation or vacation. The above measures were obtained from the subject's responses to six landscape scenes, two of which were judged to be representative of each of the three landscape types.

Over-all findings indicated that the rural landscape was most favorably perceived, while the suburban landscape type ranked second. The perceptions of the urban landscape type were generally unfavorable. More detailed analysis of the data was performed using a 2 x 2 x 2 factorial design with analysis of variance. Significant differences appeared for the urban landscape by place of residence and by age, with urban subjects and third grade subjects holding a more favorable image of the urban landscape. Significant interactions were found relating to the cognitive images of the suburban landscape, while no significant differences were found in the cognitive images of the rural landscape.

It was concluded that place of residence and age are associated with children's images of landscape types, but that the effects vary with the type of landscape being considered. Supplementary evidence indicated that most subjects possessed misinformation concerning each of the three landscape types. The operation of biases and stereotypes were especially apparent in the subjects' evaluation of urban and rural landscapes. Possible sources of stereotypic images were indicated. Recommendations were made for the refinement of methodology and for further investigation of the sources of stereotyped images.

Barbara Bartz, the Newberry Library, Chicago, will discuss the papers.

The implications of the great variety of influences which affect the child's mental image of his immediate environment and his world are certainly of great concern to those interested in the development of the child, in his learning processes, and in his education. The studies reported in this symposium concern themselves with a small part of the answer to the question of: What is the nature of children's images of various types of environments? The questions of *how* and *why* these images were formulated remain to be answered by further research in the behavioral and social sciences.

The considerations brought forth in these studies point to the fact that the problem of assuring that children will develop an accurate cognitive image of a particular place is, indeed, one of great complexity. Important variables which may enter into this problem are: the nature of the place itself; the child's direct and secondary experiences with the place; the child's present image, value system, and psychological make-up; and finally, the nature of the situation in which teaching and learning takes place. All of these factors offer fruitful areas for further research.

EXPLORATIONS IN METHODOLOGICAL APPROACHES TO STUDIES IN THE POLITICS OF EDUCATION (SIG/POLITICS OF EDUCATION)

MIKE M. MILSTEIN, State University of New York, Buffalo, ORGANIZER

In the last decade studies have begun to appear at an increasing rate of frequency in the politics of education. As in any expanding area of research concentration, these studies have varied significantly in methodological approach (as well as methodological rigor). While explorations in methodological approaches should be encouraged during the formative stages of a young field of study, it seems appropriate that practitioners in these fields submit their research to thorough methodological criticisms by their peers. Without such self-analysis, improvement and breakthroughs in methodological approaches will not likely occur. In light of this concern several of the recent major studies in the politics of education will be methodologically dissected in the symposium. In most instances the symposium participants will focus on research in the politics of education with which they have been personally involved. The symposium should help all students of the politics of education to sharpen their methodological skills. Each of the presentations will describe the methodologies used in the studies discussed; outline the methodological problems encountered; recommend methodological modifications and offer alternative methodological suggestions for similar studies in the future. The participants and their presentations are described briefly below.

Professor George R. La Noue, Teachers College, Columbia University will present the paper *"The Politics of Community Control: Methodological Considerations."* The presentation will review some of the decentralization studies underway, including the author's, and suggest some of the problems in such research, as well as possible next steps. The bibliography on the subject now contains more than 200 items, but almost all these pieces are normative, speculative, or narrow-gauge description. Systematic quantitative research of any consequence is only now beginning to be reported.

Professor Raphael O. Nystrand, The Ohio State University and Professor Conrad Brinner, The Claremont Graduate School will discuss *"The Governance of Big City School Systems: Methodological Considerations."* The presentation will focus upon the efforts of a Danforth Foundation team, of which the authors were members, to develop a general common framework for the study of big city school decision-making. Included will be the development of the methodological framework, the way in which it was implemented, the extent to which it allowed local initiative and adaptations by team members studying the different cities, and the implications which these procedures have for making comparative statements about the cities in which the work was carried out.

Professor Michael W. Kirst, Stanford University and Professor Edith K. Mosher, University of Virginia will present their paper *"State Decision-Making for Federal Aid in Education: Methodological Considerations."* The presentation will focus upon the efforts of a Ford Foundation team, of which the authors were members. As with the Nystrand-Brinner paper, the Kirst-Mosher paper focuses upon a team effort, in this instance a team which studied state education decision-making in six states and the role that federal funds play in the total local-state-federal complex of educational finance. The implications of such cooperative research are analyzed.

Professor Stephen K. Bailey, Syracuse University and Professor David Colton, Washington University, St. Louis will discuss the papers.

GOING PUBLIC: RESEARCHERS AND SCHOOL OUTPUT ACCOUNTABILITY TO SOCIETY (SIG/RESEARCHERS FOR ACTION

EDWARD WYNNE, University of Illinois, Chicago Circle, ORGANIZER

School accountability is a major subject of current school reform discussion. The term is ambigious, and has received varying interpretations. Among the most productive definitions offered is the concept that the public should, periodically, receive meaningful information about the effectiveness of their schools. This definition is consistent with the usage of the word "accountability" as it is popularly applied in business. This data oriented definition encompasses many types of proposed reforms. However, they all center on more informed public participation in school policy-making: voucher systems, which assume that the choosing public will be informed of the effectiveness of various choices; contracting-out arrangements, where the public and school boards must have criteria specified, defined and measured and, simply speaking, many other means that assume that schoolmen must keep the public better informed about the results of their efforts.

Educational researchers have an important role to play in all of these alternatives or in the operation of these systems: measurement, precise description, and the analysis of data are all essential research skills.

However, while there has been considerable discussion of the implications of accountability for teachers and administrators, the implications for researchers have not been as carefully considered. For instance: do researchers have skills which can facilitate accountability? what are they? if they do, should these skills be used to promote accountability? how? who should be accountable to whom? what are the implications (for researchers) of the various answers to these questions, and, finally, assume that researchers and accountability is seen as part of the issue of profession and their diverse constituencies—what larger principles are then suggested?

This symposium assumes that educational researchers should assist the development of school accountability to the public. It will attempt to explore some of the implications sketched above. Here are the qualifications and perspectives the various members will bring:

David K. Cohen (Harvard University) was formerly associated with the United States Commission on Civil Rights, and is particularly concerned with the questions: What part should professionals (such as educational researchers) play in affecting the field in which they work? What kinds of relations should they seek to create between themselves and schoolmen, the policy, the media, etc.? Why? His paper is titled "Going Public: Professions and their Changing Roles."

James S. Coleman (Johns Hopkins University) is the principal author of a major national study of school desegregation and productivity. He contends that the accountability movement can have important beneficial effects for both schools and researchers, and that it should receive strong support from researchers. His paper is titled "Going Public: An Important Means of Advancing the Discipline."

David Krathwohl (Syracuse University) has been concerned with measurement, and national education research policy. While he is sympathetic toward researcher involvement with public accountability, there are important reservations he must utter. His paper is titled "Going Public: A Sympathetic but Cautious Appraisal."

Joseph Krevisky (Croft Publishing Company) is a former educational researcher, now concerned with disseminating research results.

His experience with Title I, ESEA evaluations has convinced him that there are many important steps researchers can take to improve both the quality and public impact of their evaluations. His paper is titled "Going Public: An Unaccepted Obligation."

Edward Wynne (University of Illinois, Chicago Circle) is National Coordinator for the Network for Better Education, and is attempting to promote greater engagement between researchers and the polity—parents, mediamen, and politicians. He will discuss the immediate, concrete steps researchers can take if they wish to assist the development of accountability. His paper is titled "Going Public: Do We Know How? The Mechanics."

HELPING EDUCATION CONSUMERS: PROBLEMS AND ISSUES IN USING VOLUNTEER RESEARCHERS IN ASSISTING COMMUNITY AND CITIZEN GROUPS (SIG/RESEARCHERS FOR ACTION)

ALAN S. HARTMAN, Massachusetts Advisory Council on Education, ORGANIZER

This symposium will identify and discuss some of the major problems involved in using volunteer researchers to assist education-oriented community and citizens groups. The symposium will explore the issues confronted by the one-year old Network for Better Education. The Network is a national volunteer organization established by AERA and coordinated by a special interest group, *Researchers for Action.* In August, 1971 the Network included 100 local coordinators and 500 volunteers. Most of them are AERA members; most of them are not in the special interest group. The Network is presently in operation in such cities as New York, Boston, Pittsburgh and San Francisco. It represents a deliberate effort to make the volunteered expertise and skills of educational researchers available to education consumers, their representatives and communications media: parent groups, civil rights organizations, legislators, mediamen. Usually these citizens have little access to professional advice, and are poorly funded.

The first four presentations, to be made by Allan S. Hartman of Boston, Annie Stein of New York, Peter Wolmut of Portland and Patricia Simon of Los Angeles will focus on: (a) the planning and operation of Network in each of the participating centers; (b) analyzing the strengths and weaknesses of these operations; and (c) recommending ways for improving the operation of the Network. The Legal Defense representative (to be later designated by the Fund) and Charlotte Ryan will present consumer perspectives on the operation. The two discussants for this symposium, Matthew Miles and James C. Kelly, both of the Teacher's College, will seek to relate their research and experiences to (a) ways Network can improve its processes and delivery systems for rendering help and (b) analyzing other types of needs Network might seek to meet. Chairman of the symposium will be Edward Wynne, national coordinator for Network.

The Network grew out of the efforts of a special interest group, Researchers for Action. As a result of its urgings, the AERA, in 1970, passed a resolution encouraging members to volunteer their research skills (on request) to community groups concerned with school improvement. As a result, Researchers for Action helped to form the Network. It is hoped that the Network will eventually include many research disciplines, plus lay leaders, all working together to assist consumers in fostering educational improvement.

The rationale for the Network is simple: Education consumer groups, outside the regular school system, have had little access to relevant expertise. Yet such groups represent a considerable resource for school improvement. Over 60% of AERA members polled in 1970 indicated a willingness to volunteer their time and skills in working with such community groups. The need for an agency, like the Network, which would bring researchers and community groups together, became obvious.

Providing research help to groups operating outside the system enables these groups to exercise countervailing power they ordinarily could not mount. The Network is analogous to professional groups in law and medicine who have tried to provide services to outside groups which these groups could not provide for themselves. In the long run, volunteer professionals who align themselves with consumers may bring about major adjustments in the services offered. In addition, such new alliances might even, eventually, generate additional pressures for more and better research—to assist all citizens and children.

THE IMPACT OF THE NATIONAL INSTITUTE FOR EDUCATION ON PRACTICE IMPROVEMENT (SIG/RESEARCH UTILIZATION)

RONALD G. HAVELOCK, University of Michigan, ORGANIZER

The National Institute of Education will hold out a promise of future improvements in educational practice at every level throughout the land, but how will this promise be realized? What strategies of change and knowledge diffusion are implied in the creation of such an organization? What plans are being considered to maximize the impact of NIE on practice and when will these plans be activated?

Harry Silberman, National Center for Educational Research and Development, U. S. Office of Education, reports on the current status of planning with a special focus on the ways in which NIE will most likely affect educational practice in the short and the long run. The probable relationship of NIE to the National Center for Educational Communication and other existing mechanisms of diffusion will be examined. His paper is titled "The Role of NIE in a National Context of Educational Reform."

Ronald G. Havelock, University of Michigan, will review current planning efforts in the light of theories of knowledge dissemination and utilization. He will suggest past strategies of change which parallel the projected strategies of NIE and indicate how these have fared. Procedures for research and development on the process of educational change will be suggested. His paper is titled "Alternative Strategies for the Utilization of NIE to Improve Educational Practice."

Presenters and discussants will explore alternative ways to establish effective linkage between NIE and the various educational publics it is intended to serve, national, state, and local. Lee G. Burchinal, National Center for Educational Communication, U. S. Office of Education, Hendrik Gideonse, Committee on Government Operations, U. S. Senate and Matthew B. Miles, Program on Humanistic Education, State University of New York, Albany, will discuss the papers.

THE IMPACT OF SCHOOL DISTRICT RESEARCH DIVISIONS ON INTERNAL DECISION MAKING (SIG/RESEARCHERS FOR ACTION)

JAMES H. LYTLE, School District of Philadelphia, ORGANIZER

This symposium will attempt to provide a realistic picture of the role research plays in school system decision making and suggest how that role might be expanded. Among the topics considered will be the sorts and sources of information used by school administrators in making program and budget decisions; the staff characteristics of school district research divisions; the milieu in which school district research is conducted; the types of research being produced by these research divisions; how the evaluations of Federally-funded programs affect program characteristics; and monitoring and evaluation models, procedures, and strategies which might increase the impact of research divisions on school system decision making.

Additionally, an effort will be made to consider the information flow between school districts' internal and external systems and ways in which this information flow could be modified to provide parents and community with information that allows them to be better critics of the schools.

"The Nature and Sources of Data Used in Making 1971-72 Operating Budget Reduction Decisions" will be presented by James H. Lytle, School District of Philadelphia. During the spring of 1971 the School District of Philadelphia went through the difficult process of making drastic reductions in its proposed operating budget for the 1971-72 school year. School District research personnel were excluded from almost every aspect of the budget decision process. In this presentation an effort will be made to determine why research personnel and the information available to them are of so little import in the vital budget decision process. Further, it will be demonstrated that, contrary to prevailing opinion, administrators actively involved in budget decisions make extensive use of empirical data in the process. Finally, strategies will be suggested for bringing about more congruence between the efforts of research and administrative personnel in school systems.

"Research Utilization in Project Management" is the topic of Michael H. Kean, School District of Philadelphia. In June of 1970, the Philadelphia Public Schools initiated a $5.5 million decentralized reading program. The program relies upon a two-way accountability model and utilizes reading project managers in each of the eight districts. At the central office level, the Assistant to the Superintendent serves in the capacity of an ombudsman-facilitator, and plays a key role in managing the entire project. This presentation will assess how the data generated at both the central office level and in each district is utilized to monitor the project and make planning and implementation decisions regarding its on-going operation.

"The Effect of School District Evaluation of Federal Programs upon Decision Making" will be discussed by Roger Fishman, School District of Philadelphia. The evaluation of Title I, E.S.E.A. as well as other Federal projects has been required through legislative action. Such legislation has provided both the funds and the impetus for school districts to conduct research and evaluation studies designed to provide information to decision makers. In this paper a discussion of one district's attempts at evaluation and their effects upon the decision making process will be presented. Discrepancies between "what could be" and "what is" in terms of evaluation efforts and in terms of the actual decision making structure will be examined and reasons for these differences will be proposed.

"The Interface between Program Evaluators and Program Administrators" is the topic of Calvin Smith, Columbus, Ohio, Public Schools. This presentation will discuss the facilitants and restraints to an efficient interface between program evaluators and program administrators in the Columbus, Ohio, Public Schools. Emphasis will be placed on two facets of the interface: 1) the general communication aspects of the interface (as opposed to particular program or funding areas), and 2) the facilitants and restraints external to the evaluation–administration interface.

Malcolm Provus, University of Virginia and Ronald Havelock, University of Michigan will discuss these papers.

METHODOLOGICAL PROBLEMS IN THE DEVELOPMENT OF PREDICTOR AND CRITERION MEASURES IN BLACK STUDIES RESEARCH (SIG/RESEARCH FOCUS ON BLACK EDUCATION)

ROBERT K. GABLE, University of Connecticut, ORGANIZER

The objectives of this symposium are: (1) to identify and discuss methodological problems associated with the development of predictor and criterion measures in educational research which have particular reference to blacks; and (2) to illustrate appropriate methodologies carried out to deal with the problems which are identified.

The advent of black studies was associated with controversy which stemmed from confusion of its purposes and directions. Although viewpoints vary about the black studies movement, few deny its potential impact on the university community and society in general. If black studies centers are to further develop and be in a position to support their associated activities, viable evaluation methods must be available to ascertain the impact of sponsored programs. An immediate evaluation problem faced by educational researchers is the paucity of predictor and criterion measures which are particularly applicable for use in research with emphasis on blacks. The presentations in this symposium are intended to familiarize the researcher with problems and suggested methodologies in such areas as selection of high potential students, attitude measurement and curriculum evaluation.

"Admissions Policies: Minority Student Motivation and Attitude Toward Black Studies" will be discussed by Floyd L. Bass, Director of Center For Black Studies, University of Connecticut. More flexible administration of admissions standards in higher education currently have not emphasized cognitive factors or the more objective characteristics of prospective students, although high school grade point averages and SAT scores may still be reviewed as information. "Open door" admissions policies increasingly cite student "desire" as a primary trait with relevance for estimating success potentials. The objective of this presentation is to discuss the relationship of minority student motivation as non-cognitive or "non-objective" indices of their success potential for higher education.

The point of view is that there is a need to study and compare levels of black and Puerto Rican student motivation with respect to their attitudes toward continuing education and black studies. Instrument development and methodological problems for such a study of students in a Skills Center, adult education program, and in a compensatory program for minority matriculants at The University of Connecticut is described.

"The Need For the Construction of an Instrument to Assess Exceptional Potential" is the topic of Thomas E. Grant, Research Associate and Joseph S. Renzulli, Associate Professor, University of Connecticut. The growing national effort to provide disadvantaged members of minority groups with equal opportunities to pursue a higher education is often hampered by our inability to predict their academic success through the use of traditional admission procedures. The purpose of this presentation is to explore an alternative means for predicting the college success of pre-college students by identifying those exceptional individuals who are admittedly a "high risk" in terms of traditional admission standards, but who also possess "high potential" in reference to their great individual and cultural resources of intellect and talent, energy and purpose, and creativity.

The point of view to be presented is that alternative selection procedures for transitional and supportive educational programs at the college level are needed. Methodological techniques and problems encountered in the development of such predictor instruments will be discussed in the context of the ongoing development of the Self and Cultural Indices of Academic Potential (SCIAP).

"Measuring Attitudes Toward Black People" will be presented by H. Fred Simons, Director of Summer Program and Robert K. Gable, Associate Director, Bureau of Educational Research and Service, University of Connecticut. The purpose of this presentation will be to discuss methodological problems associated with evaluating changes in attitude which are associated with black studies courses.

The point of view in this presentation is that if black studies courses and other racial interaction stimuli are to be used to improve human sensitivity and attitudes of individuals, measuring devices are needed to evaluate the effectiveness of these courses.

A methodology is described briefly which was used to develop an Attitude Toward Black People instrument. An item pool consisting of 119 items reflecting positive and negative attitudes toward black people was generated. By employing an empirical item sorting procedure, Latent Partition Analysis, with 36 black college presidents and a factor analysis of response data obtained from 212 college students, a 50 item

Attitude Toward Black People scale was developed which purportedly measures nine dimensions with acceptable internal consistency reliabilities. The implications for use of the instrument will be discussed.

"The Affective Dimensions of Black Studies" will be discussed by Clarence G. Williams, Counseling Center, University of Connecticut. Since the conception of black studies, educators have wrestled with the question of the various attributes or concepts that are required for desirable racial interaction in higher education. References have been made in various and ambiguous manners of the black experience, black perspective, black presence, and black studies but of varying degrees of acceptance as stimuli for desirable racial interaction in higher education.

The purpose of this presentation will be to discuss first, the need for the development of an instrument to measure the affective dimensions of black studies and second, the methodological problems associated with the development of such a measure.

Using as an example data generated during the development of an instrument to measure such affective dimensions, the point of view presented is that content validity, readability and subject cooperation are of paramount importance before one can examine construct validity. Problems associated with an attempt to generate dimensions in the examination of the construct validity of a 50 item instrument using two models of factor analysis followed by orthogonal and oblique rotations will be briefly noted.

"Problems of Evaluating Affective Change Related to Reading Black Literature" is the topic of Gwendolyn J. Cooke, Baltimore Public Schools. Curricula specialists are becoming increasingly aware of the need for elementary and secondary curricula to develop the students' increased awareness of and appreciation for cultures other than their own. With this in mind the writer developed a curriculum package entitled "Black-White Literary Relations: Thematic Parallels" for use in American literature class.

The purpose of this presentation will be to discuss the need for the development of alternative criterion measures which can be used to evaluate affective changes associated with curriculum units related to the black experience.

The point of view to be presented is that a realistic assessment of attitudinal change cannot rely on a single pre-post test. The problems associated with the development of such a pre-post criterion measure necessitate the generation of carefully constructed follow-up questionnaires and structured interviews. Procedures employed and benefits of such follow-up procedures will be discussed in the context of a 16 experimental and control classroom study.

Joseph S. Renzulli, Director of Teaching the Talented Program, University of Connecticut, will discuss these papers.

MULTIPLE LINEAR REGRESSION APPLIED TO AUTOMATIC INTERACTION DETECTION AND TO THE ANALYSIS OF COVARIANCE AND GAIN SCORES (SIG/MULTIPLE LINEAR REGRESSION)

JOE H. WARD, JR., Air Force Human Resources Laboratory, ORGANIZER

This symposium focuses on two areas of application of linear models: (1) seeking regression models that detect interaction among predictors and (2) using linear models to clarify the relationships among analyses involving covariance and gain scores.

Janos Koplyay will describe the recently developed AID-4, Automatic Interaction Detection regression computer program. This program seeks good-fitting regression models using mutually exclusive categorial predictors. It is significant in educational research because it automatically searches for complex interactions that might not be hypothesized by the researcher. The computer program also provides for cross-validation of the regression models to independent samples.

John Williams will present results from three methods of analyzing change from two modes of teaching reading. The analysis methods involve (1) Gain Scores, (2) Covariance, and (3) Residual Gain Scores. After these results are presented Earl Jennings will describe the three procedures in terms of the general linear model so that relationships among the three will be apparent. Jennings will reveal the assumptions made in each model so that the researcher will understand why the three analyses *are different.*

Janos B. Koplyay of Personnel Research Division, Air Force Human Resources Laboratory will present the paper "Multiple Regression Analysis and Automatic Interaction Detection." Multiple regression analysis is a powerful approach to the formulation and the analysis of research problems, and the testing of hypotheses. It is less restrictive than multiple correlational analysis; e.g., multiple regression analysis does not assume that the predictor variables constitute a multivariate normal distribution. The absence of this restriction permits the introduction of categorical predictor variables. One use for such variables is the establishment of mutually exclusive groups and the testing of the hypothesis that knowledge of group membership at different levels of a predictor variable improves the accuracy of prediction of a criterion of interest. The automatic interaction detector improves the power and efficiency of the application of multiple regression analysis through the identification of optimal configurations of predictor variables for criterion prediction. Joint familiarity with the Bottenberg-Ward regression techniques and the application of the automatic interaction detector will provide the research scientist with an effective tool. Without the automatic interaction detector, the establishment of optimally effective sets of predictor variables is essentially a cut-and-try, guesswork process. With automatic interaction detection, guidance is offered directly as to the optimal prediction possible with the predictor set, and the identification of reduced subsets of predictors which most closely approximate the total validity of the full set of predictors. In this sense, AID-4 is a model identifying process. The major advantage accruing to the task scientist using AID-4 is obtaining the maximum squared composite correlation without the task of attempting to identify the various relevant combinations of linear and non-linear interaction terms by trial and error to be included in the full model required by the multiple regression technique. AID-4 automatically identifies these terms which, in turn, can be used in a polynomial regression routine. The means of the final categorical groups are the proper weights to be assigned for each of those groups in predicting the criterion variable.

John D. Williams of The University of North Dakota will read the paper "A Comparison of Raw Gain Scores, Residual Gain Scores, and the Analysis of Covariance with Two Modes of Teaching Reading." Three different methods of measuring change were applied to measuring the difference between two modes of teaching reading: The first method of teaching reading was the usual graded method, and the second approach considered was the vertical method. The subjects were 155 2nd-6th grade students. The tests used were the *California Reading Test* and the *Attitudes Toward Reading Inventory.* The three different approaches to measuring gain were found to be in general different, and, in some cases, opposite interpretations occur. In general, there were no large differences in the criterion scores of the two different modes of teaching reading.

Earl Jennings of The University of Texas at Austin will discuss "Linear Models Underlying Analysis of Covariance, Residual Gain Scores and Raw Gain Scores." The model ordinarily associated with the investigation of group differences in terms of raw gain scores is shown to be a special case of the model used in the analysis of residual gain scores with a simplifying assumption. The residual gain model is shown to be a special case of the covariance model with a simplifying assumption. Thus one criterion for choosing among the models is to determine the tenability of the simplifying assumptions.

THE PRE-SERVICE PREPARATION AND CONTINUING DEVELOPMENT OF MIDDLE MANAGEMENT SCHOOL ADMINISTRATORS (SIG/ORGANIZATIONAL THEORY)

ALFRED P. WILSON, New Mexico State University, ORGANIZER

Objectives of the Symposium are to 1) explain a pre-service preparation and continuing development model for middle managers, and 2) show varied ways the model can be used to build training programs and evaluate existing programs.

For one week during April of 1971 selected principals and university professors met with a representative from the National Association of Secondary School Principals and a Danforth Foundation executive to discuss tentative recommendations for the pre-service and continuing education of middle managers.

From the diligent efforts of this group emerged a tentative model preparatory program with multiple options for educational learning. The emphasis of the model is upon a systematic approach to investigating and defining suitable training programs. The model is three dimensional and no finite limitations. Each dimension contains unique aspects of a preparatory program. While the model does not attempt to prescribe criteria, it does provide a means for establishing and/or evaluating them.

Dimension of Height. Within this dimension are found contents, processes, and behaviors. Four major areas of content have been identified. They are: I. Educational Program Development; II. Personnel Development; III. School-Community Relations; and IV. Management of Schools. Within each area of content, four processes have been determined: A. Diagnostic; B. Prescriptive; C. Implementive; and D. Evaluative. Then, within each process in each area of content, coded behaviors have been stated. The code refers to Bloom's taxonomic hierarchy in both the cognitive and affective domains. Thus the number four represents "Analysis" which is the taxonomic level for that particular behavior.

Dimension of Width. The width dimension contains methods, assessments, and personnel involved in the development of an educational leadership program. Examples of methods, assessments, and personnel are not intended to be prescriptive. Possible methods include lecture, discussion, case, scenario, simulation, independent study, tutorial, student research, team research, laboratory approach, clinical studies, computer-assisted instruction, learning activity packages, internship, human-relations training, and gaming.

Assessment was identified as having the following types: conceptual, applicational, performance, simulation, performance on the job, and self evaluation.

Many different kinds of people can be involved as resources in preparatory programs. Some examples are as follows: professors of educational administration, professors of other departments, professional organizations, school district representatives, and students.

Dimension of Depth. Viewed in this dimension the model suggests a means of looking at the continuous progress of preparatory and in-service programs. Greater degrees of sophistication, more complex behavioral skills and performance, and areas of specialization determined by the candidate's goals are implied. No attempt has been made to determine the continuity of any program. Each institution has the responsibility for this determination.

One of the major problems of training programs in middle management is the lack of total system analysis. The above tentative model is an attempt to alleviate this concern. Those who will use the theoretical constructs of the model will be better able to examine existing programs for the purpose of change, and generate research for examining the facts, concepts, presumptions, and assumptions of the model. Hopefully the presentation should stimulate the audience to this end.

RESEARCH UTILIZATION PROGRAMS AND THE NATIONAL CENTER FOR EDUCATIONAL COMMUNICATION, USOE (SIG/RESEARCH UTILIZATION)

JOHN M. CARLSON, National Center for Educational Communication, USOE, ORGANIZER

To furnish leadership and support to strengthen educational communication throughout the country, the Office of Education has established a National Center for Educational Communication (NCEC). Programs are designed and funded to accomplish five complementary objectives: accelerate the spread of exemplary programs and validated practices; develop communication networks; assure access to current educational knowledge; disseminate interpreted information on priority topics; and develop and coordinate research and development in educational communication systems. Of these five programmatic objectives, the first, second, fourth and fifth directly pertain to research utilization efforts.

The NCEC strategy for accelerating local use of improved practices is, first, selection of several priorities for development of major communications programs, followed by the identification and validation of tested alternatives to current practices. Information about validated alternatives is then communicated to potential adopters. The design of a communication program is based on planned or rational adoption resulting from the adopter having passed through successive stages. These adopters rely on different types and sources of information in each of these stages. For maximum effect, information appropriate to the next stage; these linkages are planned and are part of a multi-step strategy to encourage adoption of demonstrated alternatives. Next, NCEC strategy calls for support for trial and installation, with particular focus on the early adopters and opinion-leaders. Lastly, each communication program needs to be assessed so that results can be used to strengthen subsequent efforts.

NCEC's five objectives are interrelated components of a comprehensive approach for accelerating long-term educational improvement. Because of social and financial demands, educators need help now about tested or promising practices in selected priority areas such as the disadvantaged, career education, and reading. Parallel with the dissemination of information about improved practices, NCEC is building a linked structure of national, State and local information services. Such networks will increase the awareness and use of current knowledge and tested practices and products. Backing up these information systems is a comprehensive, national knowledge base. In addition NCEC continues to develop interpretive reports which provides the educational practitioner with application-oriented view of current knowledge relevant to real problems. Finally, to insure that NCEC's program is based upon current theory and evidence about communication and research utilization, it funds a program of applied research and development. For instance, it is vital that NCEC base its planning on the information requirements and information-using behavior of educators.

The proposed seminar will present a balanced look at NCEC's complementary program of enhancing better utilization of research and best practices information. Mr. Chesley of NCEC will focus on examples of a specific problem-solving model, including validation and spread of exemplary programs and products and targeted communications. Dr. Lovin will discuss the application of Ronald Havelock's linker model to the local school setting. Dr. Paisley will talk about the match between the knowledge base and user needs. A State director of research and a university specialist in communications research will discuss the implications of the ideas and programs presented by the three participants.

"National Center for Educational Communication Delivery Systems for Research Utilization" will be presented by Robert Chesley, National Center for Educational Communication, U. S. Office of Education. NCEC's program of accelerating the spread and installation of validated practices and research-based products is based on research about what kinds of information are used in different stages of adoption. Examples of NCEC-supported programs of these processes are given: use of mass media to create awareness, interpersonal communication and direct observation to provide personally-relevant information, and consultant assistance to help with trial adoption and eventual institutionalization. In addition, illustrations of NCEC's program of targeted communications are presented.

"Establishing Effective Linkages at the Local Education Agency Level" is the topic of Richard Lavin, Project Director, Merrimack Center, Chelmsford, Massachusetts. One of the main reasons for the lack of knowledge utilization in Education is the gap which exists in the system of knowledge transfer. The Merrimack Center is an example of a regional educational information center which attempts to link the research and practice worlds. Establishing and maintaining effective linkages, however, is dependent upon knowing the real educational needs of target audiences and upon maintaining constant feedback loops. Once these needs are identified, technical assistance agents can provide a continuous link between the resource and user systems.

"Matching the Knowledge Base to User Needs" will be discussed by M. William Paisley, Stanford University. This country's emerging educational information system has a new and vigorous capacity to respond to educators' information needs provided these needs are systematically ascertained. What is necessary is the development of a comprehensive "sensing network" to gather, analyze, and synthesize information-need data and then direct it to planners of communication programs at the federal and State levels. Seven substudies are proposed to compare and evaluate methods for gathering timely and representative data on user information preferences and on user information-seeking behavior. These user data are then matched with the ERIC knowledge base.

W. E. Ellis, Director, Office of Research, South Carolina State Department of Education, and Lawrence E. Sarbaugh, Michigan State University, will act as discussants.

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